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A STUDY ON

KEEL VAYU

(DISSERTATION SUBJECT)

For The Partial Fullfillment Of The

Requirements to The Degree Of

DOCTOR OF MEDICINE (SIDDHA)

BRANCH I– MARUTHUVAM DEPARTMENT

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BONAFIDE CERTIFICATE

Certified that I have gone through the dissertation submitted by **Dr.G.Karpagam,(Reg:no 321311203)** a student of final year M.D(s),Branch-I ,Department of Maruthuvam, National Institute Of Siddha,Tambaram Sanatorium,Chennai-47, and the dissertation work has been carried out by the individual only. This dissertation does not represent or reproduce the dissertation submitted and approved earlier.

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CONTENT

Introduction

1. INTRODUCTION

Siddha system of medicine is a most primitive, ancient system of medicine. which deals with the diseases of humanbeings efficiently with the knowledge of both subtle and also the gross material body[1]

Siddha means achievement or perfection.siddha system is largely therapeutic in nature and its origin can be traced back to birth of human race on the planet [1].

The origin of the Siddha system dates back BC 10,000- BC 4000, according to Thiru T.v. sambasivam pillai Siddha medical dictionary. The word Siddha comes from the word siddham [1].

The system is believed to be developed by 18 siddhars.One who had attained perfection in life is called siddhar. Siddhars are indeed true scientists who discovered and displayed god to the common people through their divine wisdom, medicines and elixirs with which they treated the incurable diseases of mankind [1].

Siddhars had eight supernatural powers, such as Anima, Magima, Lagima, etc., essential for their goal, as mentioned in Silappathigaram. They are the greatest men holding tremendous powers in themselves by way of yoga practice and rejuvenation [1].

According to Siddha science, the human body is composed of five primordial elements viz.,

Earth, Water, Fire, Air and Ether.

The following instances will show the transformed conditions of the five elements in the human body [1]:

1. Earth - Bones, flesh, nerves, Skin and Hair.
2. Water - Bile, Blood, Semen, Secretion and Sweat
3. Fire - Hunger, Thirst, Sleep, Beauty and Indolence.
4. Air - Contraction, Expansion and Motion.
5. Ether - Interspaces of the stomach, Heart and the Head.

They are the fundamental principles of creation, preservation and destruction in the universe.

மிகினும் குறையினும் நோய்செய்யும் நூலோர்
வளி முதலா எண்ணிய மூன்று.

- திருக்குறள்.[23]

According to this system of medicine, the human body is made up on three humours- Vaatham, Pitham, and Kabam.

1. The humour responsible for creative activity in the physical body is known as Vaatham.
2. The humour responsible for protective activityis known as Pitham.
3. The humour responsible for destruction activity against pathogens is called Kabam. (Phelgm)

In normal healthy condition ratio between them being 1:1/2:1/4.

"வழங்கிய வாதம் மாத்திரை யொன்றாகில்

தழங்கிய பித்தந் தன்னிலரை வாசி

அழங்குங் கபந் தானடங்கியே காலோடில்

பிறங்கியே சீவர்க்கும் பிச கொன்றுமில்லையே"

-குணவாகடம்[3].

The equilibrium of humours is considered as healthy and conditions their disturbance or imbalance leads to disease condition.

In siddha system of medicine the importance of dietary habits are also well emphasiszed for the disease management and prevention.

“உணவே மருந்து மருந்தே உணவு”.

Siddhars classified the diseases into 4448 and established a separate chapter.As per Sababathy kaiyedu,One such clinical entity is keel vayu[4].According

to Siddha Maruthuvam(Pothu) the signs and symptoms of KEEL VAYU is, pain&sweliing in knee joints, morning stiffness, restricted movement, difficulty to walk, can be correlated with OSTEO ARTHRITIS(KNEE) in Modern Science[4].

OSTEO ARTHRITIS is the most common form of arthritis. Approximately 80-90% of individuals older than 65 years have evidence of primary OA. In India knee osteoarthritis is more common in females than males and it the most frequent joint disease with prevalence of 22-39% [5].

Since large number of patients with OA (100 Patients/day) are reporting the OPD of Ayothidoss Pandithar Hospital, which made me to select this disease for my dissertation work. So I have chosen the drug poora parpam for my clinical trial in keelvayu. In the text veeramamunivar vagada thiratu **"POORA PARPAM "**a siddha formulation has been specifically indicated for KEELVAYU. The mode of preparation seems to be simple and cost effective. The main Ingredients of the above said formulation are Pooram (calomel), latex of *Calotropis gigantean* have anti vadha properties as per siddha literature.

The safety Studies of POORA PARPAM been completed as a Dissertation work at NIS(Referrence:Dissertation -187(D), DR.MGR MEDICAL UNIVERSITY reg no:32093606,April-2012 , Department of nanju noolum maruthuva neethu noolum,National Institute of Siddha, chennai-47.and the trial drug has not yet undergone for any clinical trial in osteo arthritis[10].

Objectives

2.OBJECTIVE

a. PRIMARY OBJECTIVE:

- To study the siddha formulations "**POORA PARPAM" (Internal Medicine) & NATHAICHOORI ENNAI (External Medicine)** in the treatment of "KEEL VAYU"(osteo arthritis) for the reduction of pain,swelling and to improve the range of movements.

b. SECONDARY OBJECTIVE:

- To study Keelvayu, on the basis of Envagai thervu, mukkutram, kalam, naadi, Neerkuri, Neikuri etc,, in order to evaluate the pathology.
- To assess the predominance of the disease related to age, sex, socio-economic status, occupation and family history etc,.

Review of Literature

3.REVIEW OF LITERATURE

SIDDHA ASPECTS

The concepts of siddha system are based on fundamental principles of 96 thathuvams. According to this thathuvams Universe originally consisted of atoms which contributed to the five basic elements named as pancha boothas individually have the name of Earth, water, fire, air, and ether which corresponds to the five sense of the human.

Pancha poothas are the foundations for three humours (**vaatham, piththam, kabam**) which are the basic elements that support our body structure.

- *Vaayu & Aagayam both constitute vaatham*
- *Theyu alone constitutes piththam*
- *Appu & Mann both constitute kabam.*

The normal ratio of Vaatham, Pitham and Kabam is 1: 1/2:1/4 respectively [3].

When the hormony of the above said humours gets deranged owing to a relative increase or decrease of one or more of the principal humours, disease is caused.

The signs and symptoms are produced according to the particular deranged humours.

KEEL VAAYU [4]

In Siddha literature keel vaayu has been described under Vaatha diseases.

Keel vaayu is the general term that includes all kinds of joint disorders.

Description of the nomenclature

Keel = Joint

Vaayu = Vatham

The joint is initially affected by the vitiated Vaatham. Pitham and Kabam accompany later. It is a disease which is common in Pitha kaalam (middle 1/3 of the lifespan- 33 to 66 years).

TYPES OF KEEL VAAYU

There are ten types of keelvayu which are mentioned in the textbook **"SIDDHA MARUTHUVAM".**

The 10 types are mentioned as below

1. Vali keel vaayu
2. Azhal keel vaayu
3. Iyya keel vaayu
4. Vali Azhal keel vaayu
5. Vali Iyya keel vaayu
6. Azhal Vali keel vaayu
7. Azhal Iyya keel vaayu
8. Iyya Vali keel vaayu
9. Iyya Azhal keel vaayu
10. Mukkutra keel vaayu

AETIOLOGY:

1. **Environmental factors [21]:**

"வாத வர்த்தன காலமேதோ வென்னில்

மருவுகின்ற ஆனி கற்கட மாதம்

ஆதனைப் பசியோடு கார்த்திகை தன்னில்

ஆடருமே மற்ற மாதங்கள் தன்னில்

போகவே சமிக்கின்ற கால மாகும்"

- யூகிவைத்திய சிந்தாமணி

In this siddha literature YOOGIMUNI said that the Vaatha diseases are precipitated in the months from Aani to Karthigai (June to December), hence the seasonal factors are involved and facilitate the Vaatha diseases.

"பதுமத்தைப் பூக்க வைக்கும் பானுமிகக் காயும்
முதுவேனிற் லிற்புவிநீர் முற்றும் - கதுமென
வற்றும் கபமிகும் வாயுமிகும் வாழ்மாந்தரங்க்
குற்ற நலிக் கேதிதென் றோது"

-சித்த மருத்துவாங்க சுருக்கம்[18]

In muthuvenil kalam due to the increased solar radiation leads to increased evaporation of water content from the body . In turn increases the kabam and vatham thathus from their normal level resulting in the production of vaatha diseases.

DIET[16].

Vatha disease is caused due to the following reasons:

தொழில் பெறு கைப்புகார்த்தல் துவர்த்தல் விசுங்கினுங்சோறும்
பழையதாம் வரகு மற்றைப் பைந்தினை யருந்தினாலும்
எழில் பெறப் பகலுறங்கி இரவினிலுறங்காத தாலும்
மழைநிகா குழலினாலே வாதங்கோ பிக்குங் காணே

- பரராசசேகரம்

- Excessive intake of tubers
- Excessive intake of chill foods like curd.
- Wandering in chill air in evening time
- Getting drenched in rain
- Living in hilly region
- Excessive sexual desire with ladies
- Heredity
-

வளிதரு காய்கிழங்கு வரைவிலா தயிலல் கோழை

புளிதயிர் போன்மிகுக்கு முறையிலா வுண்டி கோடல்

குளிர் தரு வளியிற் றேகங் குனிப்புற வுலவல் பெண்டிர்

களிதரு முயக்கம் பெற்றோர் கடிசெயல் கருவியாமால்

-சபாபதி கையெடு[4]

- Excessive intake of bitter, astringent pungent, and acrid taste food,
- Intake of vaatha food substance like varagu, thinai
- Altered sleep pattern also contribute to vatha disease.

பொற்றா மரையான் புனைமெய் யரண்காக்கும்

பொற்றா மரையான் புகல்வதென் பொற்றாம்

வளவினிலே யாக்குரம்பை மன்னென்ன மின்ன

வளவினிலே யாக்கும் வளி

தேரையர் யமக வெண்பா[17]

- Vatham is being hailed as the king, who rules the fort (Body) and enables the dwelling of the citizen (Uyir) in the fort.
- Hence Theraiyar lauds Vatham as the prime force in normal state.

3. HABITS [21]:

“தானென்ற கைப்போடு துவர்ப்புவர்ப்பு

சாதகமாய் மிஞ்சுகிலும் சமைத்த அன்னம்

ஆனென்ற ஆறினது புசித்தலாலும்

ஆகாசத் தேற்றநீர் குடித்தலாலும்

யானென்ற பகலுறக்கம் இராவிழிப்புப்

பட்டினியே மிகவுறுதல் பாரமெய்தல்

தேனென்ற மொழியார் மேல் சிந்தையாதல்

சீக்கிரமாய் வாதமது செனிக்குந்தானே”

-யூகிமுனி வைத்திய சிந்தாமணி

- Intake of food rich in bitter ,sour and pungent in taste
- Intake of cooled and old foods
- Intake of rain water
- Sleep in morning
- Awakening in night
- Frequency of starvation
- Weight lifting
- Increased sexual act
- These are the factors that disturbs & increase vaatham in our body

“ வெய்யிலில் நடக்கையாலும் மிகத்தண்ணீர் குடிக்கையாலும்

செய்யிழை மகளினரைச் சேர்ந்தனுப விக்கையாலும்

பையனே உண்மையாலும் பாகற்காய் தின்கையாலும்

தையலே வாதரோகம் சனிக்கு மென்றறிந்து கொள்ளே".

- தேரையர் வாகடம்[15]

The factors like, excessive walking in sun light and excessive intake of bitter guard , excessive sexual act also disturbs the normal functions of Vaatham.

4. Involvement of Mukkutram, ie Vaatham, Pitham and Kabam[3]:

- Viyanan and samanan are affected in Vaatham. Resulting in pain in knee joints.
- In Pitham, Sathaga pitham is affected. Resulting in painand difficulty in performing daily activities.
- Santhigam is affected in Iyyam. Resulting in pain and crepitation in knee joints.

5. Characteristic features of Vaatham [14][15]:

“வாதமே கதித்த போது வாயுவுமெழும்புங் காண்பீர்

வாதமே கதித்த போது வாயுவந்திடுஞ் சன்னி தோஷம்

வாதமே கதித்த போது வல்லடுன் மெலிந்து கொல்லும்”

- அகத்தியர் சிகிச்சா ரத்னா தீபம்

When the vaatham is increased from their normal level causes sanni and weight loss leads to death .

“வாத வீறு அன்னமிறங்காது கடுப்புண்டாம் வண்ணமுண்டாம்

மோதுகட்கு ரோகம் சுரமுண்டா மிருமலுமா முறங்காதென்றும்

ஓதரிய வாதமனலாகு நடுக்கமுண்டாம் பொருள் களயர்ந்த

தீதெனவே நரம்பித்து சந்துகள் தோறுங்கடக்குந் தினமுந்தானே"

- தேரையர் வாகடம்[15]

When the Vaatha humour aggravates it will produce the following signs and symptoms:

- loss of appetite,
- excruciating pain,
- fever,
- loss of urinary and faeces output
- loss of sleep
- shivering of the body,
- nervous weakness,
- Joint pain.

காணப்பா வாதமீறில் கால்கைகள் பொருத்து நோவும்

பூணப்பா குடல்புரட்டும் மலசலம் பொருமிக் கட்டும்

ஊணப்பா குளிருங் காய்ச்சல் உடம்பெல்லாம் குத்துவாய்வு

வீணப்பா குதமிறுக்கும் வியர்வையும் வேர்க்கும் தானே

- அகத்தியர் வைத்திய காவியம்

According to **Agathiyar vaithiya Kaaviyam**, the deranged vaatham produces increasing pain in the joints of the hands and legs ,colic pain, flatulence, constipation, scanty micturition, fever with rigor, generalized body pain , rectal prolapse and increased sweating

SITES OF VALI

வாதம் வாழுமிடம்- The sites of vali

நெளிந்திட்ட வாதமபா நத்தைப் பற்றி

நிறைந்திடையச் சேர்ந்துந்திக் கீழே நின்று

குளிந்திட்ட மூலமதூ டெழுந்து காமக்

கொடியிடையைப் பற்றியெழுங் குணத்தைப் பாரே

" குணமான வெழும்பைமேற் றொக்கை நாடி

நிணமான பொருத்திடமும் ரோமக் காலும்

நிறைவாகி மாங்கிசமெல் லாம்பரந்து

கால்கட்டி வாதமெங்குங் கலக்குந் தானே "

- வைத்திய சதகம்

According to **vaithiya sathagm**, vatham dwells in the following places: Umbilicus, rectum, faecal matters, abdomen, anus, bones, hipjoints, skin, navel plexus, Joints, Hair follicles and muscles.

PROPERTIES OF VALI:

Vaatham helps the following function in our body

- It is the humour responsible for the function of 7 UDALKATTUGAL
- It stimulate and accelerate 5 PULANGAL

Natural properties of Vatham: [Ref: Noi Nadal part-1]

1. Functioning of the “Seven Udal Kattukal” uniformly
2. Protection and strengthening of the five sensory organs. (Iymporigal)
3. Giving briskness

4. Expiration and Inspiration
5. Regulation of the “Fourteen Physiological Reflexes”(Vegam).
6. Functioning of the mind, thoughts and body

SYMPTOMS OF VATHAM THODAM:

1. Body ache - உடல் வலி
2. Pricking pain - குத்தும் தன்மை கொண்ட வலி
3. Tearing pain - கிழிதல் தன்மை கொண்ட வலி
4. Nerve weakness - நரம்பு சோர்வு
5. Mental distress - மனசோர்வு
6. Movements - அசைத்தல்
7. Joints pain - கீல்களில் வலி
8. Traumatic pain - அடிபட்டதைப் ஒத்த வலி
9. Dislocation of joints - மூட்டு விலகல்
10. Weakness of organs - உறுப்புகளின் சோர்வு
11. Paralysis of limbs - கை, கால்கள் விட்டு போதல்
12. Polydypsia - அதிதாகம்
13. Severe pain in calf and thigh muscles - தொடை மற்றும் கணுக்கால்களில் வலி
14. Bony pricking pain - என்புகளில் குத்தல் வலி
15. Anuria and constipation - நீரடைப்பு மற்றும் மலக்கட்டு
16. Unable to do flexion and extension of the limbs - கை, கால்கள் நீட்டி மடக்க இயலாமை
17. All tastes to be like astringent - எச்சுவையும் துவர்ப்பாய் இருத்தல்
18. Excess Salivation - சொள்ளு வடிதல்

VAATHA THEKIYIN ILLAKANAM:

- Tall and lean body
- Crepitations present in knee while on walking
- Blackish white skin color
- Thickened eyelids

- Whitish eyes
- Interested in Sweet, sour, astringent foods
- Increased sexual behavior
- Interested in massage and hunting
- Semi closed eyes sleep

நோய் கணிப்பு - DIAGNOSIS IN SIDDHA:

Piniyari muraigal (Method of Diagnosis) is based upon three main principles,

- Poriyal Arithal (Inspection)
- Pulanal Arithal (Palpation)
- Vinaathal (interrogation)

1. PORIYAL ARITHAL (INSPECTION):

PORI – SENSE ORGANS

"Poriyal arithal" means examining the "Pori" of the patient by the "Pori" of thephysician for proper diagnosis.

Pori is considered as the "Five sense organs" of perception namely,

1. Mei (Skin)
2. Vai (Tongue)
3. Kan (Eye)
4. Mookku (Nose)
5. Sevi (Ear)

PULANAL ARITHAL (PALPATION):

PULAN – SENSE

Pulanal arithal means examining the "Pulan" of the patient by the Physician to diagnose a disease.

Pulan are five senses. They are,

1. Smell
2. Taste
3. Vision
4. Sensation of touch
5. Hearing

3. VINAATHAL (INTERROGATION):

Vinaathal is gathering information regarding the history of disease, its clinical features , major complaints, duration of illness etc., from the patient or his/her close relatives usefu l when the patient is not in a position to speak or in the case of a child.

ENVAGAI THERVUGAL (EIGHT DIAGNOSTIC TOOLS):

It is a unique method of diagnosis in Siddha system of medicine. They are clearly

Explained by Siddhar Theraiyar;

"நாடி ஸ்பரிசம் நா நிறம் மொழி விழி
மலம் மூத்திரமிவை மருத்துவராயுதம்"

- தேரையர்

1. Naadi (Pulse):

“திருத்தமாம் வாதத்தோடே தீங்கோடு பித்தம் சேரிற்
பொருத்துகள் தோறும் நொந்து போதவே பிடிக்கும்”

- நோயின் சாரம்

“வாட்டிடும் சேத்துமத்தில் வந்திடும் வாதமாகில்
நாட்டிய கால்கள் போல நரம்பெல்லாம் வலித்து நிற்கும்”

-அகத்தியர் நாடி

சொல்லிய ஐயத்தோடே பித்தமங் கூடிற் றானால்
சலலியம் போலக் குத்தும் மைந்தனே எலும்பும் தோலும்

- காவிய நாடி

1. When piththa gets vitiation it accompany with vaatha and causes pain in every joints
2. When kabha and vaatha are vitiated pain occurs in the nerves and lower extremities.
3. When piththa vitiated with kapha it results in stabbing pain in bones and joints.

In Keel Vaayu the following Naadies are commonly seen:

Vaathapitham, Vaathakabam, Pithavaatham, Pithakabam, Kabavaatham.

2. Sparism (Sensation to touch):

In keel vaayu mild warmth noticed over the affected joint.

3. Naa (Tongue):

In keel vaayu no abnormality is seen in Naa.

It is useful to diagnose the may be anemic.

4. Niram (Colour):

In keel vaayu no abnormality is seen in Niram.

The skin complexion is used to diagnose the body constitution of the patient.

5. Mozhi (Voice)

It constitutes high, low-pitched voice, nasal speech, hoarseness of voice slurring and incoherent speech etc.

In keel vayu no abnormatlities are seen normally.

6. Vizhi (Eyes):

Both motor and sensory disturbance of eye are noticed. Redness of eyes, paleness, excessive lacrimation, swelling, corneal ulcers, sunken eyes may be noted for. In keel vayu no abnormatlities are seen normally.

In anaemic patients pale conjunctiva may be noted.

7. Malam (Faeces):

Vatha type: Black coloured stools with constipation.

Pitha type: Loose stools with yellowish red colour

Kabha type: White coloured stools with mucous

Thontha type: Stools possess some of the features of two thodams

In keel vaayu constipation was reported in some cases.

8. Moothiram[18]:

Neerkuri and Neikuri (Oil on urine sign) are special diagnostic methods regarding urine (Moothiram).

Neerkuri and Neikkuri:

"அருந்து மாறிரதமும் அவிரோமதாய்

அ ஃகல் அலர்தல் அகாலவூன் தவிர்ந்தழற்

குற்றள வருந்தி உறங்கி வைகறை

ஆடிக் கலசத் தாவியே காதுபெய்

தோரு முகூர்த்தக் கரைகுட் படுநீரின்

நிறக்குறி நெய்க்குறி நிருமித்தல் கடனே"

- சித்த மருத்துவாங்கச் சுருக்கம்[18]

Prior to the day of urine examination the patient is instructed to take a balanced diet and quantities of food must be proportionate to his routine intake. The patient could have no disturbed sleep. After waking up in the morning, the first urine voided is collected in a clear wide mouthed glass bowel and is subjected to analysis of “Neerkkuri and Neikkuri” within one and a half an hour.

வந்த நீர்க்கரி எடை மணம் நுரை எஞ்சலென்

றைந்திய லுளவை யறைகுது முறையே

- சித்த மருத்துவாங்கச் சுருக்கம்[18]

Voided urine has the following characters

1. Niram - Colour
2. Edai - Specific Gravity
3. Manam - Smell
4. Nurai - Frothy nature
5. Enjal - Deposits

Apart from these, the frequency of urination , abnormal constituents , such as sugar, protein, presence of blood, pus, also to be found out.

In keel vayu patient straw coloured urine was noticed.

9. NEIKKURI [3]:

The process of dropped gingely oil indication

நிறக்குறிக் குரைத்த நிருமண நீரிற்

சிறக்க வெண்ணெய்யோர் சிறுதுளி நடுவிடுத்

னின்றதிவலை போம் நெறிவிழியறிவும்

சென்றது புகலுஞ் செய்தியை யுணரே

நோய் நாடல் நோய் முதல்நாடல் திரட்டு - பாகம் 1

The collected specimen was examined by the following method. The collected urine specimen is kept in a glass bowel and observed under direct sunlight without shaking the vessel. Then drip one drop of gingely oil and observe the spreading pattern and concludes as follows,

"அரவென நீண்டீடின் அ ஃதே வாதம்

ஆழிபோல் பரவின் அஃதே பித்தம்

முத்தொத்து நிற்கின் மொழிவதென் கபமே

அரவில் ஆழியும் ஆழியில் அரவும்

அரவில் முத்தும் ஆழியில் முத்தும்"

-நோய்நாடல் நோய் முதல் நாடல் திரட்டு

When the oil drops lengthens like a snake it indicates ‘vatha Neer’

When the oil drops spreads like a ring it indicates ‘pitha Neer’

When the oil drops remains that of pearl it indicates’ kaba Neer’

PARUVAKAALAM (Seasonal variations):

S.No	STATE OF KUTTRAM	KAALAM
1.	Vatham thannilai adaithal	Munpani kaalam, Pinpani kaalam, Koothir kaalam, Elavenil kaalam
2.	Vatham thannilai valarchi adaithal	Muthuvenil kaalam
3.	Vatham vetrunilai valarchi	Kaarkaalam

Vatham vitiates during **Muthuvenil, i.e during summer**, the environment is hot it leads to dryness of the body and the body loses its energy through perspiration and may impair the digestion.

So, in **keel vayu** the disease shows its exacerbation during **muthuvenil kaalam.**

THINAI (Geographical Distribution):

It is divided into five types. They are,

S. NO	THINAI	LAND	AFFECTED HUMORS
1.	Kurinchi	Mountain and its surroundings Hilly terrain	Kabam
2.	Mullai	Forest and its surroundings Forest ranges	Pitham
3.	Marutham	Farm land and its surroundings Cultivable lands	All three humors are in equilibrium
4.	Neithal	Sea shore and its adjoining areas Coastal belt	Vatham
5.	Palai	Desert and its surroundings Arid zone	All three humors are affected.

நெய்தனில மெலுவர்ப்பை நீங்கா த்றினமது

வெய்தனில் மேத்ங்கு வீடாகும் - நொய்தீன்

மருங்குடலை முக்காக்கி வல்லுறுப்பைவீக்கும்

கருங்குடலைக் கீழிறிக்குங் காண்.

-பதார்த்த குண சிந்தாமணி

Geographical distribution plays a vital role in altering Mukkutrams. According to Siddha, vatha diseases are predominant in Mullai and Neithal Thinai

UDAL KATTUGAL [3]:

Our body consists of seven udal kattukal.

SL. No	UDAL KATTUGAL	FUNCTIONS	INCREASED CONDITIONS	DECREASED CONDITIONS
1	SAARAM	It gives strength to the body and mind.	Loss of appetite, excessive salivation,diminished activity, heaviness, pallor, cold, decreased physical constituents, dyspnoea, flatulence, cough, excessive sleep.	Tiredness,dryness of skin, Laziness, loss of weight, lassitude, and irritability while hearing heavy noise.
2	SENEER	Saaram after absorption is converted into senneer. Responsible for knowledge, strength, boldness and healthy complexion.	Boils and tumours in different Parts of the body, Spleenomegaly, Pricking pain, increased blood Pressure, reddish eye and skin, jaundice, leprosy, haematuria etc.	Affinity to sour and cold food, nervous debility, dryness , pallor.
3	OON	Gives structure and shape to the body and is responsible for the movements of the body.	Tubercular adenitis, Tumours or extra growth around the neck, cheeks, abdomen, thigh, genitalia.	Lethargic sense organs, pain in the joints, muscle wasting in mandibular region, gluteal region, penis, thighs.

4	KOZHUPU	Lubricates the organs on its own works.	Identical feature of increased flesh, tiredness, dyspnoea on exertion, extra musculature in gluteal region, external genetalia, chest, abdomen thighs	Loins Pain, spleenomegaly, emaciation.
5	ENBU	Protects the vital organs and used for movements and nominates the body structure.	Excessive ossification and dentition	Joint pain, falling of teeth, falling and splitting of hairs and nails.
6	MOOLAI	Present inside the bones and it gives strength and maintains the normal Condition of the bone.	Heaviness of the body and eyes, swollen inter phalangeal joints, oliguria and non healing ulcers.	Osteoporosis, Blurred vision.
7	SUKKILAM/ SURONITHAM	Responsible for the reproductive function of species.	Increased sexual activity and Signs identical to urinary calculi	Dribbling of sukkilam/ suronitham or senneer during coitus, pricking pain in the testis, inflammed and contused external genitalia.

In keel vaayu,

Saaram, Kozhuppu, Moolai and Enbu thathukkal are commonly affected.

- Saaram: Weakness, pain in knee joints
- Kozhuppu : Morning stiffness occurs in affected knee joints
- Enbu : Pain occurring in affected knee joints, crepitations present
- Moolai : Inflammation, degeneration, swelling etc

MUKKUTRAM:

Human body is influenced by Mukkutram ie Vaatham, Pitham and Kabam. They are responsible for normal physiological conditions of the body.

VAATHAM is mainly responsible for proper loco-motor functions.

Bones and joints are considered to be the main location of vaatha.

In keel vaayu

The vaatha kutram is mainly affected followed by Pitham and Kabam. This produces the following signs and symptoms,

- Deranged viyanan leads to pain and difficulty in movements. Deranged abanan leads to constipation.
- Inflammatory changes of the joints, redness and warmth are developed due to deranged pitham.
- Sathaga pitham gets affected hindering the loco motor functions
- Along with vaatham, kabam is also deranged, santhikam is affected and this leads to Abnormality in joint movements
- Erosions of bone margin increased secretion of synovial fluid due to the deranged fluid developed by deranged kabam.

1. In keel vaayu Abanan is affected and so constipation is produced.
2. Viyanan is affected it renders difficulty in movements of the knee joints.
3. Samanan is also affected because disturbed state of other Vaayu.

PITHAM:

In keel vaayu, Sathaga Pitham affected and produces difficulty in walking, climbing upstairs, squatting and sitting postures.

KABAM:

Kaba kutram stabilizes and maintains the movements of the joints and gives lubrications to all movements.

In keel vaayu Santhigam is affected and produce difficulty in movements of the knee joints.

NOI KANIPPU VIVATHAM (DIFFERENTIAL DIAGNOSIS) [4]:

Keel vaayu (**OA-KNEE**) is differentiated from the followings diseases,

1. VALI KEEL VAAYU:

It is characterized by excruciating pain and swelling involving knee joints, hip joints, elbow joints, shoulder joints and associated with systemic disturbances like dryness of mouth, pyrexia, headache, palpitation, constipation and sweating. In advanced cases it may affect the heart and produce **"Thamaraga vaayu".**

2. IYA KEEL VAAYU:

It is characterized by severe pain in the joints associated with emaciation of the body, anorexia, insomnia, cough, hiccough, vomiting, anaemia and dropsy. The common sites are spinal cord, hip joints and knee joints.

.3. VALI IYA KEEL VAAYU:

It is characterized by pain in the joints associated with effusions of joint fluid and swelling, restricted joint movements, pyrexia, fainting, insomnia, especially in knee joint asymmetrically, lymphadenopathy, generalized malaise, atrophy of the affected limb etc. The affected joint looks like **"Fox's Head".**

LINE OF TREATMENT

In Siddha system the main aim of the treatment is to cure Udarpini (due to Mukkuttram) and Manapini (due to changes in Mukkunam). Treatment is not only for perfect healing but also for the prevention and rejuvenation.

It is essential to know the disease, the aetiology, the nature of the patient, severity of the illness, the seasons and the time of occurrence must be observed clearly.

Line of treatment is as follows:

1. Neekkam (Treatment)
2. Niraivu (Rejuvenation)
3. Kaapu (Prevention)

Thiruvalluvar describes the duty of the physician, i.e. study the disease, aetiology, seek subsiding ways and do what is proper and effective.

"நோய் நாடி நோய் முதல் நாடி அது தணிக்கும்
வாய் நாடி வாய்ப்பச் செயல்"

"உற்றானளவும் பிணியளவுங் காலமும்
கற்றான் கருதிச் செயல்"

- திருக்குறள்.

1) NEEKKAM (Treatment in Siddha):

The aim of Neekkam is based on to bring the deranged Thodams to normal equilibrium state.To treat the patient with internal medicine and external medicine.

Siddha system of Medicine is based on Mukkutra Theory and hence the treatment is mainly aimed to bring the three thodams to equilibrium state and thereby restoring the physiological condition of the seven Thathus.

The three Thodams organise, regularise and integrate the body structure and their functions. They are always kept in a state of balance by thought, word, deed and food. Any imbalance will lead to disease. The imbalanced thodams are balanced by administrating purgatives or emetics or application of Anjanam (application on eyes) and followed by the appropriate systemic therapy by giving Siddha drugs.

It mentioned as below:

"விரேசனத்தால் வாதந் தாழும்"
"வமனத்தால் பித்தம் தாழும்"
"நசிய அஞ்சனத்தால் கபம் தாழும்"

- சித்த மருத்துவாங்கச் சுருக்கம்

The purgatives should be given before starting the trial to normalize the deranged Thodams to normal.

In this study the purgation is induced by giving Agasthiyar kulambu - 130 mg with hot water in early morning in empty stomach on the first day.

Then the next day onwards the trial drugs Pachaikarpoora vadagam – 1 twice a day given with hot water after food. Vaeppa Ennai – External application.

2) NIRAIVU (Rejuvenation):

The word literally means the power of securing the body from the effect of age.According to Siddhars science rejuvenation does not necessarily mean restoring the old to youth for it may simply mean the maintenance of youth without reaching the old age.

So rejuvenation is a means for prolonging life & forms a part of immortality.

T.V.Sambasivam pillai dict.

(Physical, psychological, social and economic rehabilitation and reassurance of

Individuals are known as Niraivu).

3. KAPPU (PREVENTION):

The prevention methods for Azal keel vaayu are as follows:

- Control the body weight by diet and exercise.
- Modify the nature of work which gives stress to a particular joint.
- e.g. - Avoid prolonged standing and long distance walking.
- Avoid to intake excess sour, astringent and bitter tasted foods.

4) DIETARY RESTRICTIONS:

In siddha system of medicine the importance of dietary habits also emphasiszed for the diseases management and prevention.

“மருந்தென வேண்டாவாம் யாக்கைக்கு அருந்தியது
அற்றது போற்றி உணின்”. - திருக்குறள்

In diseased condition diet restrictions or paththiyam are strictly followed to increase the effectiveness of medicine, and to reducing the severity of diseases. This is given in the following verse,

“பத்தியத்தினாலே பலன் உண்டாகும் மருந்து
பத்தியங்கள் போனால் பலன்போகும் - பத்தியத்தில்
பத்தியமே வெற்றிதரும் பண்டிதர்க்கு ஆதலினால்
பத்தியமே உத்தியென்று பார்”

- தேரையர் வெண்பா.

இச்சா பத்தியத்தில் நீக்கும் பொருட்கள்:

"கடுகு நற்றிலத் தெண்ணைய் கூழ்பாண்டங்கள் கடலை
வருவதாகிய தெங்குமா வருக்கை நற்காயம்
மடிவிலாத வெள்ளுள்ளிகொள் புகையிலை மதுபெண்
இடறு பாகலோ டகத்தி நீக்கிடலிச்சா பத்தியம்"

- சித்த மருத்துவாங்கச் சுருக்கம்

கடுகு, எள்நெய், கல்யாணபூசணிக்காய், கள், கடலை, தேங்காய், மாங்காய், பலா, காயம், உள்ளிப்பூண்டு, கொள், புகையிலை, பெண்கள் சேர்க்கை, பாகல், அகத்தி இவைகளை இச்சா பத்தியத்தில் நீக்க வேண்டும்.

"புளிதுவர் விஞ்சும் கறியால் பூரிக்கும் வாதம்"

- நோய் நாடல் நோய் முதல் நாடல் திரட்டு

மருத்துவ அறிவுரை:

புளிப்பு, துவர்ப்பு சுவையுள்ள உணவு வகைகளை நீக்க வேண்டும்
ஈரமில்லாத் தரையிலும், படுக்கையிலும் படுத்தல் வேண்டும்,
குளிர் காற்று படும்படியான இடத்தில் இருப்பதைத் தவிர்க்கவும்.
உடல் அதிக எடை இருப்பின் எடையைக் குறைக்க வேண்டும்.
அதிக தூரம் நடத்தல், அதிக நேரம் நிற்றல் தவிர்க்கவும்.

MODERN ASPECTS

ANATOMY OF JOINTS: [5][11][24][25][26][27]

Joints can be classified as synovial, fibrous, or combination joints, based on the presence or absence of a synovial membrane and the amount of motion that occurs in the joint. Normal synovial joints allow a significant amount of motion along their extremely smooth articular surface. The joints are composed of the following:

- Articular cartilage
- Subchondral bone
- Synovial membrane
- Synovial fluid
- Joint capsule.

The normal articular surface of synovial joints consists of articular cartilage (Composed of chondrocytes) surrounded by an extracellular matrix that includes various macromolecules, most importantly proteoglycans and collagen. The cartilage protects the underlying subchondral bone by distributing large loads, maintaining low contact stresses, and reducing friction at the joint.

Synovial fluid is formed through a serum ultra filtration process by cells that form the synovial membrane (synoviocytes). Synovial cells also manufacture the major protein component of synovial fluid, hyaluronic acid (also known as hyaluronate). Synovial fluid supplies nutrients to the avascular articular cartilage; it also provides the viscosity needed to absorb shock from slow movements, as well as the elasticity required to absorb shock from rapid movements.

ANATOMY OF THE KNEE JOINT

Introduction:

The knee joint is the largest joint in the body, consisting of four bones and an extensive network of ligaments and muscles. Injuries to the knee joint are amongst the most common in sporting activities and understanding the anatomy of the joint is fundamental in understanding any subsequent pathology.

Bones of the knee joint:

The knee is made up of four main bones. The femur (thigh bone), the tibia (shin bone), fibula (outer shin bone) and patella (kneecap). The main movements of the knee joint occur between the femur, patella and tibia. Each are covered in articular cartilage which is an extremely hard, smooth substance designed to decrease the frictional forces as movements occurs between the bones. The patella lies in an indentation at the lower end of the femur known as the inter-condylar groove. At the outer surface of the tibia lies the fibula, a long thin bone that travels right down to the ankle joint.

The capsule:

The knee joint capsule is a thick ligamentous structure that surrounds the entire knee. Inside this capsule is a specialized membrane known as the synovial membrane which provides nourishment to all the surrounding structures. Other structures include the infrapatellar fat pad and bursa which function as cushions to exterior forces on the knee. The capsule itself is strengthened by the surrounding ligaments.

Ligaments of the knee joint:

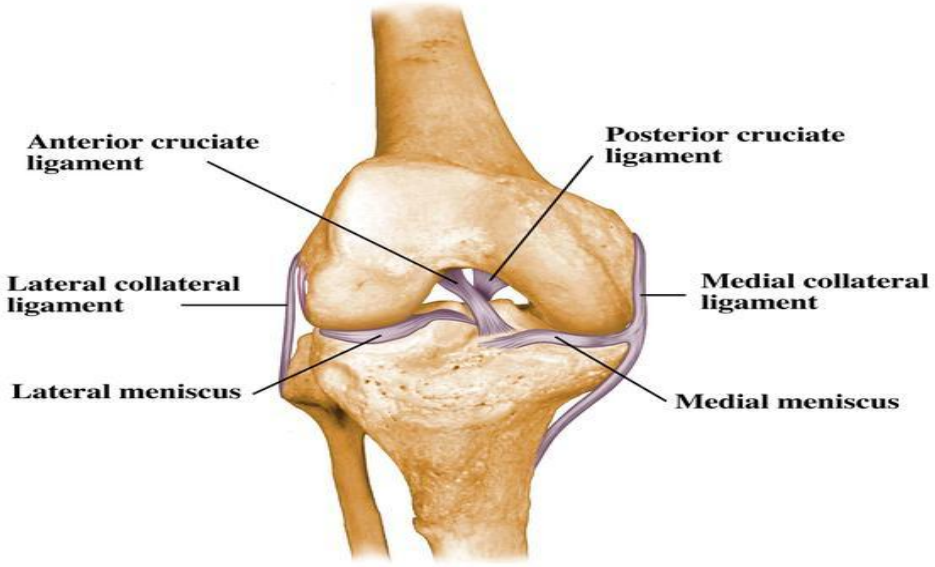
The stability of the knee owes greatly to the presence of its ligaments. Each has a particular function in helping to maintain optimal knee stability in a variety of different positions.

Menisci (knee cartilage):

Each knee joints has two crescent shaped cartilage menisci. These lie on the medial and lateral edges of the upper surface of the tibia bone. They are essential

components, acting as shock absorbers for the knee as well as allowing for correct weight distribution between the tibia and the femur.

LIGAMENTS AND MENISCI OF KNEE JOINTS



Muscle groups surrounding the knee joint:

The two main muscle groups of the knee joint are the quadriceps and the hamstrings. Both play a vital role in moving and stabilizing the knee joint.

Quadriceps muscle:

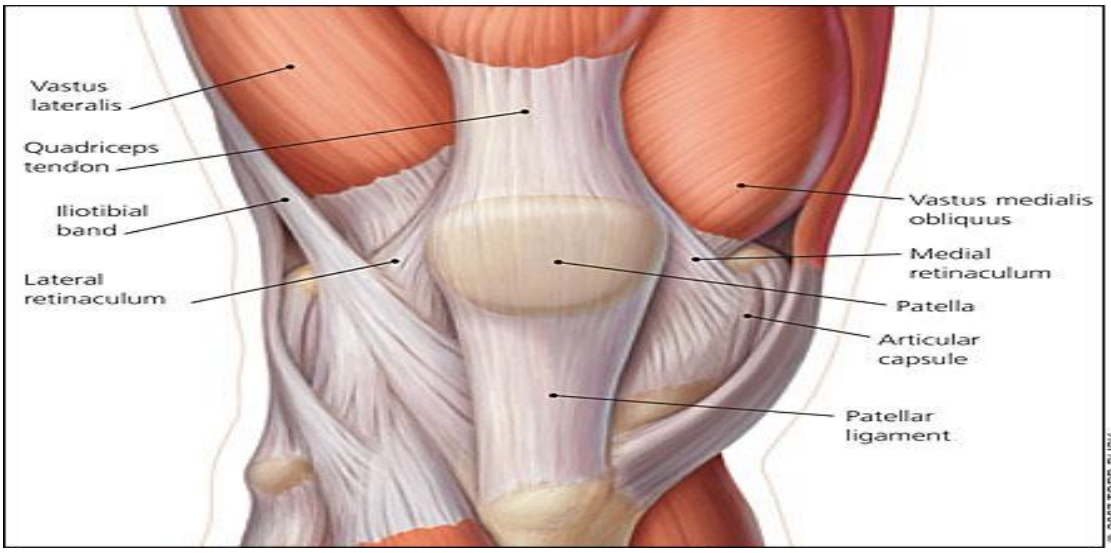
The quadriceps muscle group is made up of four different individual muscles which join together forming the quadriceps tendon. This thick tendon connects the muscle to the patella which in turn connects to the tibia via the patellar tendon. Contraction of the quadriceps, pull the patella upwards and leads to knee extension.

Hamstrings muscle:

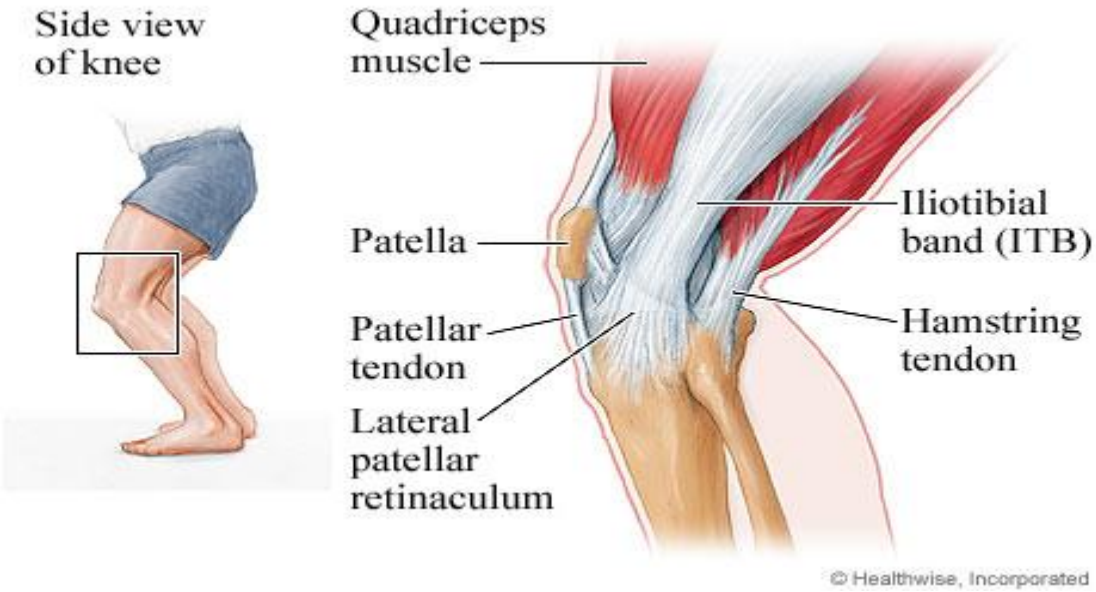
The Hamstrings muscle function in flexing the knee joint as well as providing Stability on either side of the joint line.

MUSCLES AROUND THE KNEE JOINT

AP-VIEW



LATERAL VIEW



OSTEO ARTHRITIS (OA)

INTRODUCTION:

OA is a degenerative joint disease involving the cartilage and many of its surrounding tissues. In addition to damage and loss of articular cartilage, there is remodelling of subarticular bone, osteophyte formation, ligamentous laxity, weakening of periarticular muscles and in some cases, synovial inflammation.

These changes may occur as a result of an imbalance in the equilibrium between the breakdown and repair of joint tissue. Primary symptoms of OA include joint pain, stiffness and limitation of movement. Disease progression is usually slow but can ultimately lead to joint failure with pain and disability. Osteoarthritis is abbreviated as OA or referred to as degenerative arthritis or degenerative joint disease **(DJD).**

EPIDEMIOLOGY:

International statistics:

OA may develop in any joint, but most commonly affects the knees, hips, hands, facet joints and feet. The prevalence of osteoarthritis differs among different ethnic groups. The disorder is more prevalent in Native Americans than in the general population.

In 2005, it was estimated that over 26 million people in the US had some form of OA. The prevalence of OA, however, varies greatly depending on the definition used, age, sex and geographical area studied.

Knee OA increases with age, and women have higher rates than men, especially after the age of 50 years.

The age- and sex-standardized incidence rate from the Fallon Community Health Plan in Massachusetts (USA) was highest for knee OA 240/100,000 person-years prevalence was 1.6 per 1000 per year in men and women respectively and for knee OA.

Osteoarthritis of the hip is seen less frequently in Chinese patients from Hong Kong than in age-matched white populations. In persons older than 65 years, osteoarthritis is more common in whites than in blacks. Knee osteoarthritis appears to be more common in black women than in other groups. In India knee arthritis is more

common in females than males and it is the most frequent joint disease with prevalence of 22 - 39 %.

Age- and sex-related prevalence:

`Primary osteoarthritis is a common disorder of the elderly, and patients are often asymptomatic. Approximately 80-90% of individuals older than 65 years have evidence of primary osteoarthritis. Patients with symptoms usually do not notice them until after age 50 years. The prevalence of the disease increases dramatically among persons over age 50, likely because of age-related alterations in collagen and proteoglycans that decrease the tensile strength of the joint cartilage and because of a diminished nutrient supply to the cartilage.

In individuals older than age 55 years, the prevalence of osteoarthritis is higher among women than men. Knee involvement is more common in women, with female-to-male ratios varying between 1.5:1 and 4:1.

Prevalence of knee OA in those aged 55 and above was 15.6% in men and 30.5% in women .Women are especially susceptible to osteoarthritis in the distal interphalangeal joints joints of the fingers.

At age 18-24 years, 7% of men and 2% of women show signs of osteoarthritis in the Hands. At the age 45- 55 and above was 15.6% in men and 30.5% in women and 23% show signs of osteoarthritis in the hip.

At age 65-74 years, 39% of men and women 24 show signs of osteoarthritis in the knee and 23% show signs of osteoarthritis in the hip.

At age 75-79 years, approximately 100% of men and women show some signs of osteoarthritis.

CLASSIFICATIONS:

It could be divided into 2 types

1. Primary or idiopathic osteoarthritis
2. Secondary osteoarthritis

1. Primary or idiopathic osteoarthritis:

It is due to wear and tear changes occurring in old age in which the weight bearing

joints like the hips and knees are more commonly affected. It is uncommon in non-weight bearing joints like the shoulder and elbow. Obesity is a predisposing factor.

2. Secondary osteoarthritis:

It is due to an abnormal wear and tear in a joint, caused by mechanical incongruity of
the articular surfaces. This incongruity is due to the

- Mal-union of fractures involving the articular surfaces of tibia, femur or patella
- Loose bodies in the joint
- Malalignment of the bones due to deformity like genu valgum or genu varum.

SITES OF PRIMARY OSTEOARTHRITIS:

Common sites:

- Apophyseal joint of the cervical spine
- Thoraco lumbar spine
- First carpometacarpal joint
- Distal interphalangeal joint
- Patello-femoral joint
- Tibio-femoral joint
- First metatarsalphalangeal joint

Less common sites:

- Acromio clavicular joint
- Hip joint

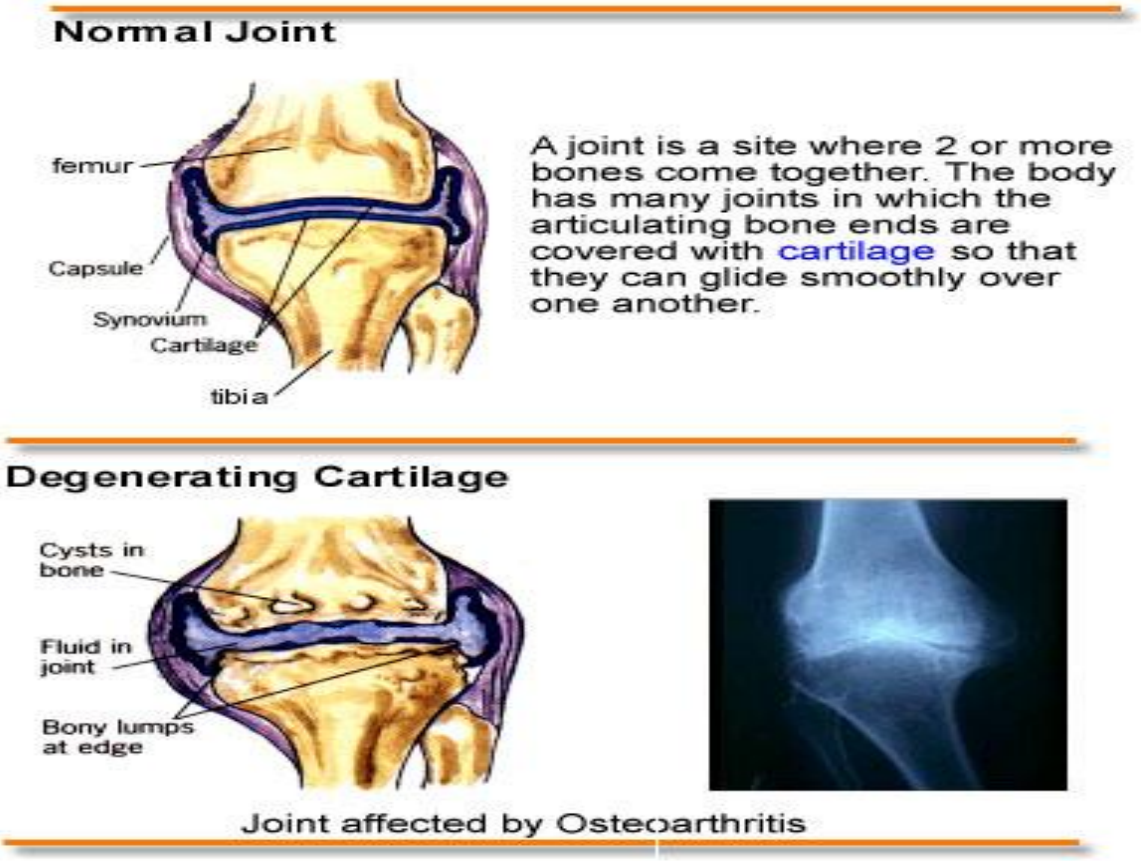
Uncommon sites:

- Shoulder joint
- Elbow joint
- Wrist joint
- Metaphalangeal joint
- Ankle joint

DIFFERENCE BETWEEN PRIMARY OA AND SECONDARY OA

PRIMARY OSTEOARTHRITIS	SECONDARY OSTEOARTHRITIS
Usually limited to one or a small number of joints.	May be limited to a small number of joints in injury related or may be in joints throughout body, if disease related
It is seen in spine, hips, knees, thumbs, and top two sets of finger joints	It is seen in hips, ankles, shoulders, wrists, and the middle set of finger joints.
No specific inflammatory or metabolic condition known to be associated with arthritis is Absent.	• Condition that cause damage to cartilage are Absent such as - Inherited disease of iron, calcium or copper storage such as hemochromatosis, • Hyperparathyroidism or Wilson's disease. • Neurologic disorder that result in the loss of nerve • Function. • Congenital disease that cause an imbalance in the • Joints.
No history of specific injury or Trauma.	History of injury to joints, such as fractures and tears or history of trauma to joints, such as Repetitive heavy lifting.

DIFFERENCE BETWEEN HEALTH KNEE AND ARTHRITIC KNEE



STAGES OF OSTEOARTHRITIS OF THE KNEE:

Osteoarthritis (OA) is divided into five stages 0 is assigned to a normal, healthy knee.

The highest stage, 4, is assigned to severe OA.

1. Stage 0 OA is classified as "normal" knee health.
2. A person with Stage 1 OA is showing very minor bone spur growth. A person with Stage 1 OA is not experiencing any pain or discomfort as a result of the very minor wear on the components of the joint.
3. Stage 2 OA of the knee is considered a "mild" stage of the condition. X-rays of knee joints in this stage will reveal greater bone spur growth, but the cartilage likely remains at a healthy size—the space between the bones is normal, and the bones are not rubbing or scraping one another.

Synovial fluid is also typically still present at sufficient levels for normal joint motion. However, this is the stage where people may first begin experiencing symptoms—pain after a long day of walking or running, greater stiffness in the joint when it's not used for several hours, tenderness when kneeling or bending.

4. Stage 3 OA is classified as "moderate" OA. The cartilage between bones is showing obvious damage, and the space between the bones is narrowing. People with stage 3 OA of the knee are likely experiencing frequent pain when walking, running, bending, or kneeling.

   They also may experience joint stiffness after sitting for long periods of time or when waking up in the morning. Joint swelling may be present after extended periods of motion, too.

5. Stage 4 OA is considered "severe." People in Stage 4 OA of the knee experience great pain and discomfort when walking or moving the joint. That's because the joint space between bones is dramatically reduced—the cartilage is almost completely gone, leaving the joint stiff and possibly immobile. The synovial fluid is decreased dramatically, and it no longer helps reduce the friction among the moving parts of a joint.

STAGES OF OSTEO ARTHRITIS

PATHOPHYSIOLOGY

Primary and secondary osteoarthritis are not separable on a pathologic basis, though bilateral symmetry is often seen in cases of primary osteoarthritis, particularly when the hands are affected

Traditionally, osteoarthritis was thought to affect primarily the articular cartilage of synovial joints; however, pathophysiologic changes are also known to occur in the synovial fluid, as well as in the underlying (subchondral) bone, the overlying joint capsule, and other joint tissues (see Workup).

Although osteoarthritis has been classified as a noninflammatory arthritis, increasing evidence has shown that inflammation occurs as cytokines and metalloproteinases are released into the joint. These agents are involved in the excessive matrix degradation that characterizes cartilage degeneration in osteoarthritis.[Therefore, it is no longer appropriate to use the term degenerative joint disease when referring to osteoarthritis.

In early osteoarthritis, swelling of the cartilage usually occurs, because of the increased synthesis of proteoglycans; this reflects an effort by the chondrocytes to repair cartilage damage. This stage may last for years or decades and is characterized by hypertrophic repair of the articular cartilage.

As osteoarthritis progresses, however, the level of proteoglycans eventually drops very low, causing the cartilage to soften and lose elasticity and thereby further compromising joint surface integrity. Microscopically, flaking and fibrillations (vertical clefts) develop along the normally smooth articular cartilage on the surface of an osteoarthritic joint. Over time, the loss of cartilage results in loss of joint space.

In major weight-bearing joints of persons with osteoarthritis, a greater loss of joint space occurs at those areas experiencing the highest loads. This effect contrasts with that of inflammatory arthritides, in which uniform joint-space narrowing is the rule.

In the osteoarthritic knee, for example, the greatest loss of joint space is commonly seen in the medial femorotibial compartment, though the lateral femorotibial compartment and patellofemoral compartment may also be affected. Collapse of the medial or lateral compartments may result in varus or valgus deformities, respectively.

Erosion of the damaged cartilage in osteoarthritic joint progresses until the underlying bone is exposed. Bone denuded of its protective cartilage continues to articulate with the opposing surface. Eventually, the increasing stresses exceed the biomechanical yield strength of the bone. The subchondral bone responds with vascular invasion and increased cellularity, becoming thickened and dense (a process known as eburnation) at areas of pressure.

The traumatized subchondral bone may also undergo cystic degeneration, which is attributable either to osseous necrosis secondary to chronic impaction or to the intrusion of synovial fluid. Osteoarthritic cysts are also referred to as subchondral cysts, pseudocysts, or geodes (the preferred European term) and may range from 2 to 20 mm in diameter. Osteoarthritic cysts in the acetabulum (see the image below) are termed Egger cysts.

At areas along the articular margin, vascularization of subchondral marrow, osseous metaplasia of synovial connective tissue and ossifying cartilaginous protrusions lead to irregular outgrowth of new bone (osteophytes). Fragmentation of these osteophytes or of the articular cartilage itself results in the presence of intra-articular loose bodies (joint mice).

Along with joint damage, osteoarthritis may also lead to pathophysiologic changes in associated ligaments and the neuromuscular apparatus. For example, lateral collateral ligament complex abnormalities are common in knee osteoarthritis.

AETIOLOGY:

PRIMARY CAUSE OF OSTEOARTHRITIS:

Though exact cause is not known, the following factors are suspected to play an important role in the causation of primary osteoarthritis

1) Endocrine
2) Post Traumatic
3) Inflammatory joint disease
4) Metabolic
5) Congenital or developmental
6) Genetic
7) Neuropathic and others

1. ENDOCRINE:

People with Diabetes may be prone to osteoarthritis. Other endocrine problems also may promote development, including Acromegaly, Hypothyroidism, Hyper parathyroidism and Obesity.

2. POST TRAUMATIC:

Traumatic causes can be further divided into macro trauma or micro trauma. An example of macro trauma is an injury to the joint such as bone break causing the bones to line up improperly (mal alignment), lose of stability or damage cartilage. Micro trauma may occur over time (chronically). An example of this would be repetitive movements or the overuse noted in several occupations.

3. INFLAMMATORY JOINT DISEASE:

This category would include infected joints, chronic gouty arthritis and rheumatoid disease.

4. METABOLIC:

Disease causing errors of metabolism may cause osteoarthritis. Examples include Paget's disease and Wilson's disease.

5. CONGENITAL OR DEVELOPMENTAL:

Abnormal anatomy such as unequal length of legs may be a cause of osteoarthritis.

6. GENETIC:

A genetic defect may promote breakdown of the protective architecture of cartilage. Examples include collagen disturbances such as Ehlers- Danlos Syndrome.

7. NEUROPATHIC:

Diseases such as Diabetes can cause nerve problems. It may affect the the Joints and limbs.

8. OTHERS:

Nutritional problems may cause osteoarthritis. Other disease such as haemophilia and sickle cell anaemia are further examples.

SECONDARY CAUSES OF OSTEO ARTHRITIS:

The causes for secondary osteoarthritis of the knee are as follows:

- Obesity
- Valgus and varus deformities of the knee.
- Intra – articular fractures of the knee, etc.
- Rheumatoid arthritis, infection, trauma, TB, etc.
- Hyper parathyroidism.
- Haemophilia.
- Syringomyelia
- Overuse of intra- articular steroid therapy.

It is generally observed that secondary osteoarthritis occurs in the younger age groups and is more severe than the primary. Apart from all the features of osteoarthritis, secondary osteoarthritis has the features of the corresponding aetiological condition.

RISK FACTORS

Factors that increase your risk of osteoarthritis include:

- Older age. The risk of osteoarthritis increases with age.
- Sex. Women are more likely to develop osteoarthritis, though it isn't clear why.

- Bone deformities. Some people are born with malformed joints or defective cartilage, which can increase the risk of osteoarthritis.
- Joint injuries. Injuries, such as those that occur when playing sports or from an accident, may increase the risk of osteoarthritis.
- Obesity. Carrying more body weight puts added stress on your weight-bearing joints, such as your knees.
- Certain occupations. If your job includes tasks that place repetitive stress on a particular joint, that joint may eventually develop osteoarthritis.
- Other diseases. Having diabetes, underactive thyroid, gout or Paget's disease of bone can increase your risk of developing osteoarthritis.

SIGNS AND SYMPTOMS:

Osteoarthritis symptoms often develop slowly and worsen over time. Signs and symptoms of osteoarthritis include:

- Pain. Your joint may hurt during or after movement.
- Tenderness. Your joint may feel tender when you apply light pressure to it.
- Stiffness. Joint stiffness may be most noticeable when you wake up in the morning or after a period of inactivity.
- Loss of flexibility. You may not be able to move your joint through its full range of motion.
- Grating sensation. You may hear or feel a grating sensation when you use the joint.
- Bone spurs. These extra bits of bone, which feel like hard lumps, may form around the affected joint.

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PAIN MECHANISMS IN OSTEOARTHRITIS

Pain, the main presenting symptom of osteoarthritis, is presumed to arise from a combination of mechanisms, including the following:

- Osteophytic periosteal elevation
- Vascular congestion of subchondral bone, leading to increased intraosseous pressure
- Synovitis with activation of synovial membrane nociceptors
- Fatigue in muscles that cross the joint
- Overall joint contracture
- Joint effusion and stretching of the joint capsule
- Torn menisci
- Inflammation of periarticular bursae
- Periarticular muscle spasm
- Psychological factors
- Crepitus (a rough or crunchy sensation)

STIFFNESS:

Stiffness of the affected joint is often noticed first thing in the morning, and after resting. Stiffness during rest (gelling) may develop, with morning joint stiffness usually lasting for less than 30 minutes.

SWELLING:

Swelling, which is sometimes warm to touch, may be noticeable in an arthritic joint.

DEFORMITY:

Deformity can occur with osteoarthritis due to bone growths and cartilage loss. Bone growths in the end joints of the fingers are called Heberden's nodes. Bouchard's nodes are bone growths in the middle joints of the fingers. Degeneration of knee cartilage can result in the outward curvature of knees (bow- leggedness).

PHYSICAL EXAMINATION:

Physical examination findings in patients with the disease are mostly limited to the affected joints.

A deep, achy joint pain, presumably arising from a combination of mechanisms, is the main symptom of osteoarthritis. Also, reduced range of motion and crepitus are frequently present .

Malalignment with a bony enlargement (depending on the disease's severity) may occur. Most cases of osteoarthritis do not involve erythema or warmth over the affected joints.

However, an effusion may be absent. Limitation of joint motion or muscle atrophy around a more severely affected joint may occur. Heberden nodes, which are absent palpable osteophytes in the distal interphalangeal joints, are characteristic in women but not in men. Inflammatory changes are typically absent or at least not pronounced.

DIAGNOSIS:

There is no single sign, symptom or test result that allows a definitive diagnosis of osteoarthritis. Instead the diagnosis is based on a consideration of several factors, including the presence of the characteristic signs and symptoms of osteoarthritis, physical examination and the results of laboratory tests and x-rays.

PROGRESSION OF OSTEOARTHRITIS:

The etiopathogenesis of osteoarthritis has been divided into 3 stages.

1. Proteolytic breakdown of the cartilage matrix occurs.
2. The fibrillation and erosion of the cartilage surface, with a subsequent release of proteoglycan and collagen fragments into the synovial fluid.
3. The breakdown products of cartilage induce a chronic inflammatory response in the synovium.

PROGNOSIS:

The prognosis of osteoarthritis depends on the joints involved and the severity of the condition. A several clinical features associated with more rapid knee osteoarthritis (OA) progression, these include age, body mass index, varus deformity, and multiple involved joints, and their presence may help identify those more likely to have knee OA progression. The prognosis is good for patients with osteoarthritis who have undergone joint replacement, with success rates for hip and knee arthroplasty being generally more than 90%. Younger and more active patients will require revisions, whereas the majority of older patients will not.

DIAGNOSTIC CRITERIA:

Formal criteria helpful for diagnosis of osteoarthritis in synovial joints:

- Age greater than 60 years.
- Pain and swelling in knee joint
- Morning stiffness lasting less than 30 minutes.
- Crackling sensation (crepitus) present in knee joint.
- Joint- line or periarticular tenderness.
- Bony swelling (osteophyte) around joint margins.
- Restricted joint movements

INVESTIGATIONS:

a. X - Ray

Radiological features: The earliest change seen is the asymmetrical narrowing of the joint space and subchondral sclerosis in the medial compartment of the joint. Later, osteophytes are seen in the periphery of the articular surfaces of the femur, tibia and patella.

b. Arthroscopic Examination

It allows direct inspection and visualization of the damaged joint surface.

c. Synovial fluid Analysis

Shows non-inflammatory picture.

d. Bone scan

e. CT

f. MRI.

COMPLICATIONS OF OSTEOARTHRITIS:

The **major complications** of osteoarthritis of knee

- Joint deformities
- Subluxation
- Ankylosis
- Intra- articular loose bodies

Life style effects include

- Depression
- Anxiety
- Feelings of helplessness
- Limitation of daily activities
- Job limitations

Materials & Methods

4. MATERIALS AND METHODS

STUDY DESIGN & CONDUCT OF STUDY:

- STUDY TYPE: An open clinical trial
- STUDY PLACE: OPD & IPD of Ayothidoss Pandithar Hospital, National Institute of Siddha, Tambaram Sanatorium, Chennai-47.
- STUDY PERIOD:12 Months
- SAMPLE SIZE:40 Patients
-

PREPARATION AND PROPERTIES OF TRIAL DRUGS

STANDARD OPERATING PROCEDURE:

SOURCE OF TRIAL MEDICINE:

The required raw drugs for the preparation of POORA PARPAM (internal) and NATHAICHOORI ENNAI(external) were purchased from a well reputed country shop and the raw drugs will be authenticated in concern department (Department Medicinal botany, NIS and SCRI and purified. The medicine was prepared in Gunapadam laboratory of National institute of Siddha.

PREPARATION OF TRIAL DRUGS:[8]

A. Internal Medicine: POORA PARPAM: Ref: Veerama munivar vagada thiratu,part-2,S.P.Ramachandran,Edition-sep 1994 :pg.no-69&70].

Ingredients:

1. Purified pooram (calomal)	**-**	**3 1/4 varagan(13.65 gms)**
2. Latex juice of *Calotropis gigentia, linn*	**-**	**14 palam (490 grms)**
3. Juice of *Allium cepa, linn*	**-**	**14 palam (490 grms)**

STANDARD OPERATING PROCEDURE:

METHOD OF PURIFICATION OF RAW DRUGS[6]:

Kammaru vetrilai-1/4 palam (8.75 Gms)

Milagu –1/4 palam (8.75 Gms)

The above mentioned 2 Ingredients were made into paste by water. In a mud pot 1.3lit water(1.padi) was taken, and the paste was mixed with water.The raw drug pooram was tied in a dry clean cloth ,and immersed into the water and constantly heated until the water reduced into ¾ part.then The pooram was taken out washed with pure water.

ALLIUM CEPA: Pealed off the outer skin.

METHOD OF PREPARTION:

Purified Pooram wasplaced in a clean dry cloth,.The above mentioned quantity of latex of *Calotropis gigentia* was taken in a mud pot and pooram covered with the cloth was immersed into the erukan pal and constantly heated until the latex dried out.Then it was ground into paste with small onion juice and was made into small pills and dried in shade.pills were placed in a mud plate and covered with similar size of mud plate.The margines of the plates were covered with clay pasted cloth.The plates were placed inside the pit and pudam carried out with 40 palam cow dung cakes(1400 gms).Next morning the mud plates were removed and finished poora parpam was collected.

Drug storage:

The prepared drug was stored in a clean and dry wide mouthed glass container.

Dispensing:

The prepared drug was dispensed in sachets (6mg each) Patients will be advised to collect the medicines once in 4days for 8days. At each visit the patients were advised to return the unconsumed drug if any.

Drug administration:

The prepared drug was given for 4 days followed by 4 days of break, again the medicine was given foe 4 days.

EXTERNAL MEDICINE:

STANDARD OPERATING PROCEDURE FOR "NATHAICHOORI ENNAI" [9]: Ref: Sarabenthira vaithiya muraigal (Vadharoga sigichai), edition IV,nov-1998,pg:1.

Required raw drugs:

1. Mutrina nathaichoori *ver (Spermacoce hispida, linn*)-3 palam (105gms)

2. Vasambu (*Acorus calamus, linn)* - 3/4 palam (26.25gms)

3. Poondu (*Allium sativum, linn*) - 1/4 palam (8.75gms)

4. Amanaku ennai (*Ricinus communi,* linn) - 1 padi (1.3 lit)

PURIFICATION OF TRIAL DRUGS:

ROOT OF NATHAI CHOORI: Washed with water

VASAMBU : Burnt the acorus calamus until it turned into charcoal.

POONDU : Pealed off the outer skin

METHOD OF PREPARATION:

Above mentioned 3 drugs were made into paste and mixed with castor oil the mixture was allowed to boil till it reduced the thylam consistency and finally the oil was filtered, and collected in a glass container.

DRUG STORAGE:

The prepared oil was stored in a clean and dry wide mouthed glass bottle.

DISPENSING: The prepared oil was dispensed in bottle (80 ml) once in 4days for 8days.

Review of Drug

1.பூரம்

MERCUROUS CHLORIDE (CALOMEL) [7]

இடைவாத சூலை யெரிசூலை குன்மந்
தொடைவாழை வாதமாஞ் சோணி-யிடையாதோ
வொக்குரச கர்ப்பூர மொன்றோ யளவிடுநல்
இக்குவெல்லத் தேழுநாளீ.

பொருள் :

தீ.பி:இடுப்பை பற்றிய சூலை, வாதகுன்மம், தொடை வாழை, வாதரத்த, நோய்,சுரம், மஞ்சட்காமாலை, பித்த தோடம், சீதபேதி, நீர்கோவை, விரண சந்நி, றாத விரணைங்கள், மேக வியாதி, செரியாமை, வாந்தி, பேதி, கிருமி நொய், கீல்வாதம், சொறி, சிரங்கு, மலபந்தம் முதலியன தீரும்.

Throbbing pain in the lumbar region,burning sensation,ulcer due todisorders of vadham humour,hepatomegaly,pyrexia,jaundice,basiilary dysentery,dropsy,chronic ulcer,venereal diseases,indigestion,vomiting,diarrhoea,worm infestation, rheumatism, itching, constipation, and scabies[20].

சுவை : உப்பு,கார்ப்பு
வீரியம் : வெப்பம்
பிரிவு : கார்ப்பு

செய்கை

உடல்தேற்றி-Alterative
உமிழ் நீர் பெருக்கி-Sialagogue
கிருமி நாசினி-Anti septic

2.எருக்கு – *Calortropis gigantean*.lin [13]

- **English name :**Mudar
- **Telungu :** jilledu-chettu
- **Malayalam** : Erukka
- **Kannadam** : Yakkeda-gida
- **Sanskrit** : arka
- **Hindi** :Akan

வேறு பெயர் : அருக்கன்

சுவை : கைப்பு ,கார்ப்பு ,மதுரம்

தன்மை : வெப்பம்

பிரிவு : கார்ப்பு

செய்கை

வெப்பமுண்டாக்கி - Stimulant

உடல்தேற்றி-Alterative

மலமிலக்கி-Laxative

புழுக்கொல்லி-Anthelmentic

குணம்

மன்னையுங் கையெடுக்க வைத்தெயிற்றி னேயகற்றி
யுன்னு பிணியை யோட்டுதலாற்-சொன்னேன்
எருக்கெனவே பூமி யினிலே விளங்கு
"ருக்க மருக்கனென லாம்.(தே.வெண்பா)

பொருள் :எருக்கு ,வளி(வாத)நோய்களுக்கு நன்மருந்தகும்;பல நோய்களை போக்கும். ஐய நோய்களாகிய இருமல்,இரைப்பு இவைகளையும் ஓட்டிவிடும்

It is good for deranged vadha humour,it also cures cough and bronchial asthma.

CHEMICAL COMPONENTS [19]

- Calotrropin
- Calotoxin
- Uscharincalotanic acid
- 19-nor ad 18, 20-epoxy-cardinolides
- Calotroposides A and B
- Oxypregnanneoligo glycosides
- Giganticine

3.வெங்காயம்- *Allium cepa*.lin [13]

வேறு பெயர்:ஈருள்ளி ,உள்ளி ,ஈரவுள்ளி ,ஈரவெங்காயாம், காயம், சுக்கிரந்தம் நிச்சயம், பலாண்டு

பயன்படும் உறுப்பு : பூ, கிழங்கு, விதை (Flower,Tuber,Root)

சுவை : கைப்பு ,கார்ப்பு

தன்மை : வெப்பம்

பிரிவு : கார்ப்பு

செய்கை

வெப்பமுண்டாக்கி-stimulant

சிறுநீர்பெருக்கி-Diuretic

கோழையகற்றி-Expectorent

சூதகமுண்டாக்கி -Emmenagogue

தடிப்புண்டாக்கி-Rubefacient

உள்ளழலாற்றி-Demulcent

காமம்பெருக்கி-Aphrodisiac

பண்பு

வெப்பமூ லங்கிரந்தி வீறுரத்த பித்தமுடன்

செப்புநா அக்கிரந்தீ ராத்தாகம்-வெப்புக்

கடுப்பறுமந் தஞ்சந்நி காசம்வயிற் றுப்பல்

தடிப்பேறும் வெங்காயத்தால்

பொருள் : உடலின் வெப்பம், மூலம், சிரங்கு, குருதியழல், அக்கரம், நீர்வேட்கை, கழிச்சல் முதலியன தீரும்.

Body heat, hemorrhoids, scabies, hypertension, aphthous ulcer, diarrhoea, excessive thirst.

CHEMICAL COMPONENTS [22][19]

Organic sulfur

- thiosulfinates
- Cepaenes
- S-oxides

Quercetin

Alyl sulfides

Flavonoids

4. நத்தைசூரி – *Spermacoce hispida*.lin [13]

- **English name:** Shaggy buttonweed
- **Telungu:** Madana-chettu
- **Malayalam**: Thartavel
- **Sanskrit**: Shri-gandha chandanam
- **Hindi:** Madana ganti

வேறு பெயர் :கடுகம், குழிமிட்டான், சூரி, தாருணி, தொலியாகரம்பை

பயன்படும் உறுப்பு : விதை,வேர்(Seed,Root)

சுவை : இனிப்பு துவர்ப்பு,. தன்மை: தட்பம் பிரிவு : இனிப்பு

செய்கை :

வேர்(Root)

- உடற்றேற்றி - Alterative
- குளிர்ச்சியுண்டாக்கி - Cooling

ACTION :[31,32]

- Analgesic
- Anti-oxidant
- Anti inflamatory

5.ஆமணக்கு- *Ricinus communis*.lin [13]

- **Telungu:** Madana-chettu
- **Malayalam**: Thartavel
- **Sanskrit**: Shri-gandha chandanam
- **Hindi:** Madana ganti

வேறு பெயர்:ஏரண்டம், சித்திரம் ,தலரூபம்

சுவை : கைப்பு

தன்மை : வெப்பம்

பிரிவு : கார்ப்பு

செய்கை :

பாற்பெருக்கி - Galactagogue

வாதமடக்கி - Anti vadha

பயன்படும் உறுப்பு : விதை ,வேர்(Seed,Root)

பண்பு

வாதத் தொடக்கை வரவொட்டா மற்படிக்கு
காதத்துக் கப்பாற்-சூதத்தைப்
பேரண்ட பந்திக்கும் பேதிக்கும் நோய்காட்டை
யேரண்டம் மென்பதின்யே. (தே.வெண்பா)

பொருள் : சிற்றாமணக்கு கழிச்சலை உண்டாக்கும், வளி குற்றத்தை எழவொட்டாமல் தடுக்கும்.

It inducec loose stools, and dominates vadha humour.

CHEMICAL COMPONENTS [19]

- Ricinoleste of glycerol
- Tri-ricinolein
- Palmitin
- Stearin
- Viscid oil
- Glyceride of dihydroxy stearic acid

6.வசம்பு-*ACORUS CALAMUS* [13]

- **English:** Sweef-flag
- **Telungu**: vasa
- **Malayalam**: vayambu
- **Sanskrit**: vacha
- **Hindi:** Bach

வேறு பெயர் : உக்கிரம், வசம், வசை, வேணி, சுடுவான், உரைப்பான், பேர் சொல்லா மருந்து, பிள்ளை மருந்து.

பயன்படும் உறுப்பு : வேர் **(Root)**

சுவை : கார்ப்பு

தன்மை : வெப்பம்

பிரிவு : கார்ப்பு

பண்பு:

பாம்பாதி நஞ்சற் புதப்புண் வலி விடபாகங் குன்மம்
சூம்பாரிரத்த பித்தமுக நாற்றம்வன் சூலைசன்னி
வீம்பாம்பை காசம் பிலகஞ் சிலி பதம் வீறிருமல்
தாம்பாங் கிருமி யிவை யேகு மாசிவ சம்பினையே

பொருள் :

எல்லா நஞ்சுகள், புண் வகைகள், ஐவகை வலி,குன்மம், ரத்தபித்தம், வாய்நாற்றம், சூலை, முப்பிணி, இருமல், ஈரல்நோய், யானைக்கால், நாடப்புழு முதலியன தீரும்.

Toxins, five types of epilepsy, gastritis, hypertension, halitosis, delirium, pricking pain, liver diseases, filariasis.

CHEMICAL COMPONENTS [19]

- Acorin
- Acoretin
- Calamine
- As aryl-aldehyde
- Heptylic and palmitic acid
- Eugenol
- Pinene
- Camphene

7.வெள்ளுள்ளி-*Allium sativum*.lin [13]

- **English:** Garlic
- **Telungu:** Thella-gada
- **Malayalam**: Velluli
- **Sanskrit**: Lasuna
- **Hindi:** Lashan

வேறு பெயர் :

இலசுனம்,காயம்,உள்ளி,பூண்டு,வெள்ளைபூண்டு,வெள்வெங்காயம்.

பயன்படும் உறுப்பு :கிழங்கு(Tuber)

செய்கை :

அகட்டுவாய்வகற்றி-Carminative

பசி தீதூண்டி-Stomachic

உரமாக்கி -Tonic

உடற்தேற்றி-Alterative

வெப்பமுண்டாக்கி -Stimulant

கோழையகற்றி -Expectorent

சிறுநீர்பெருக்கி -Diuretic

புழுக்கொல்லி-Anthelmintic

பண்பு

சன்னியோடு வாதந்தலை நோவு தாள்வலி
மன்னிவரு நீர்கோவை வன்சீதம்-அன்னமே
உள்ளுள்ளி கண்பாய் உளைமூல ரோகமும் போம்
வெள்ளுள்ளி தன்னால் வெருண்டு

பொருள் : செவிடு, நாட்பட்ட இருமல், இரைப்பு, வயிற்றுப்புழு, முப்பிணி வளிநோய்கள், ஐயதலைவலி, வாய்நோய், நீரேற்றம், முதலியன தீரும்

Deafness, chronic cough, bronchial asthma, worm infestation, delirium, hemorrhoids, headache due to deranged kabam, mouth disorders.

CHEMICAL COMPONENTS [19]

- Acrid volatile acid
- Starch
- Mucilage
- Albumin
- Allyl propyl disulphide

Observation & Results

DISTRIBUTION AND RESULTS

1. Gender
2. Age
3. Kalam
4. Occupation
5. Seasonal variation
6. Thinai
7. Socio-economic status
8. Dietary habits
9. Precipitating factor
10. Mukutram
11. Udal thathukal
12. En vagai thervu
13. Neerkuri
14. Neikuri
15. Naadi
16. Kanmenthiriyam
17. Duration of illness
18. Involment of knee joint
19. Clinical features
20. Results
21. Secondary outcome

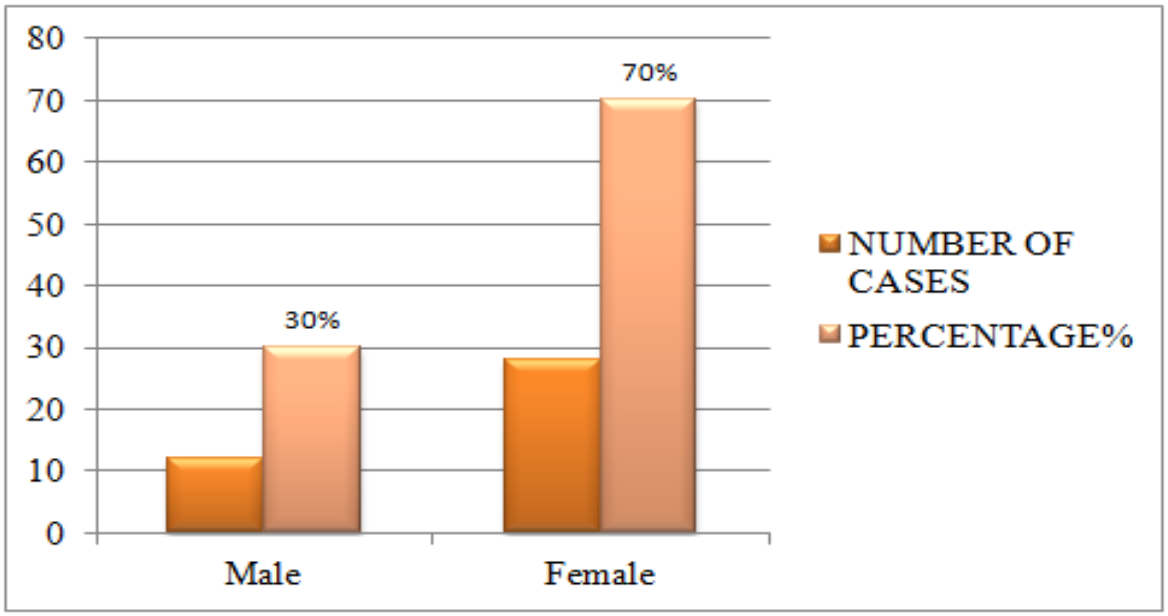
1. GENDER

1. Gender distribution

GENDER	NUMBER OF CASES	PERCENTAGE%
Male	12	30
Female	28	70
total	40	100

Inference:

Among 40 cases, the disease was found to be higher in Female i.e. (70%).



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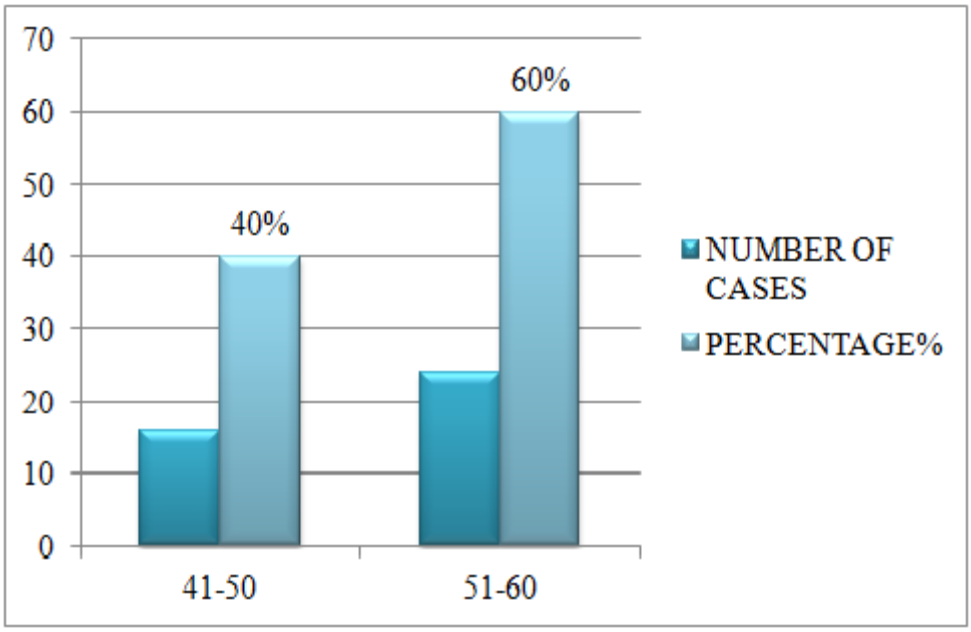
2. AGE

2. Age Distribution

AGE(YEAR)	NUMBER OF CASES	PERCENTAGE%
41-50	16	40
51-60	24	60
total	40	100

Inference:

Among 40 cases, the disease was found to be higher in the age group 51-60 years.

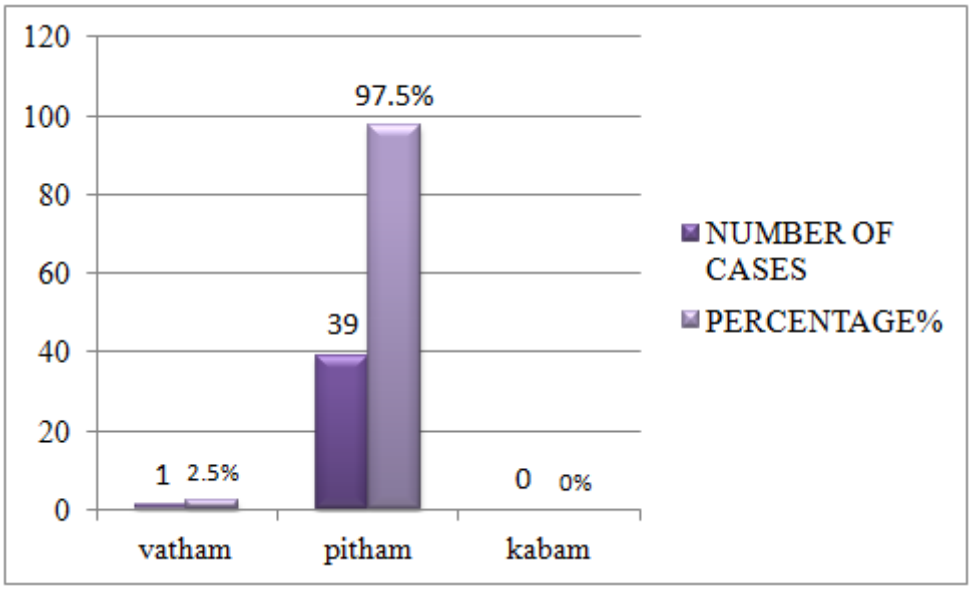


3. Kalam distribution

Vaatha kaalam	-	1 case (2.5 %)
Pitha kaalam	-	39 cases (97.5)
Kaba kaalam	-	0 case

Inference:

Out of 40 cases, 39 cases were found to be in Pitha kaalam, i.e. between 33 – 66 years and 1 case was found to be in Vaatha kaalam (31-32 years).

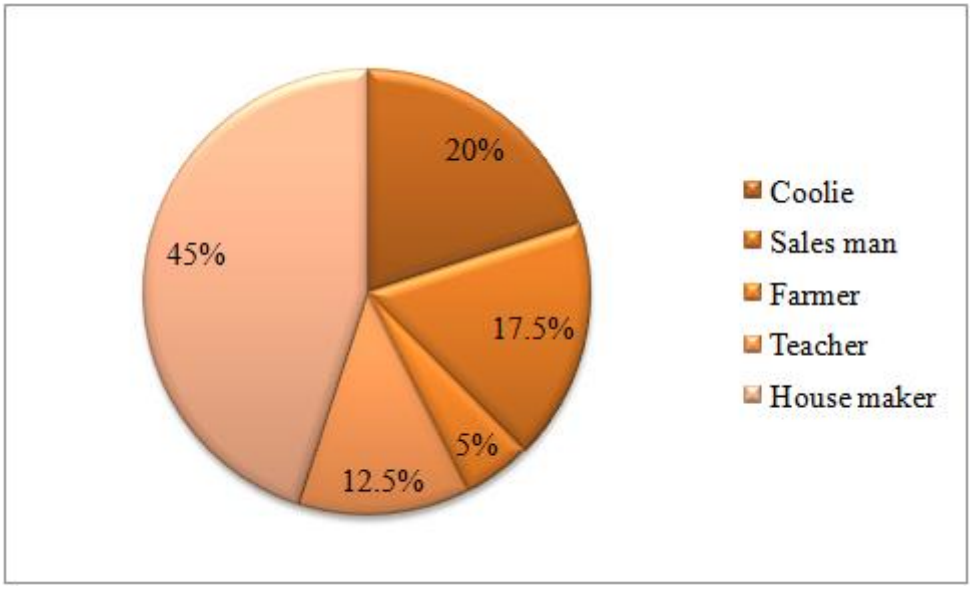


4. Occupational status

OCCUPATION	NUMBER OF CASES	PERCENTAGE%
Coolie	8	20
Sales man	7	17.5
Farmer	2	5
Teacher	5	12.5
House maker	18	45
Total	40	100

Inference:

Out of 40 cases, 26 patients (45 %) were Home makers.

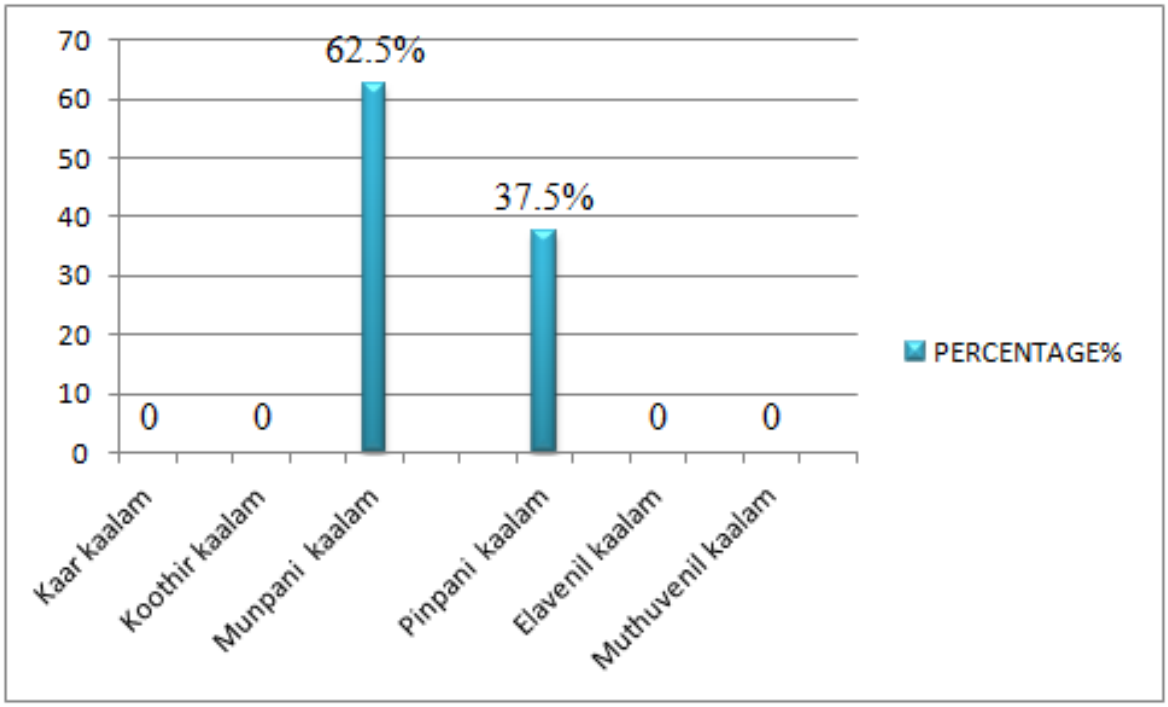


5. Seasonal variation :

SEASON	NUMBER OF CASES	PERCENTAGE%
Kaar kaalam	-	-
Koothir kaalam	-	-
Munpani kaalam	25	62.5
Pinpani kaalam	15	37.5
Elavenil kaalam	-	-
Muthuvenil kaalam	-	-
Total	40	100

Inference:

Out of 40 cases, 25 patients (62.5%) were admitted in Munpani Kaalam and 15patients (37.5%) were admitted in Pinpani Kaalam.

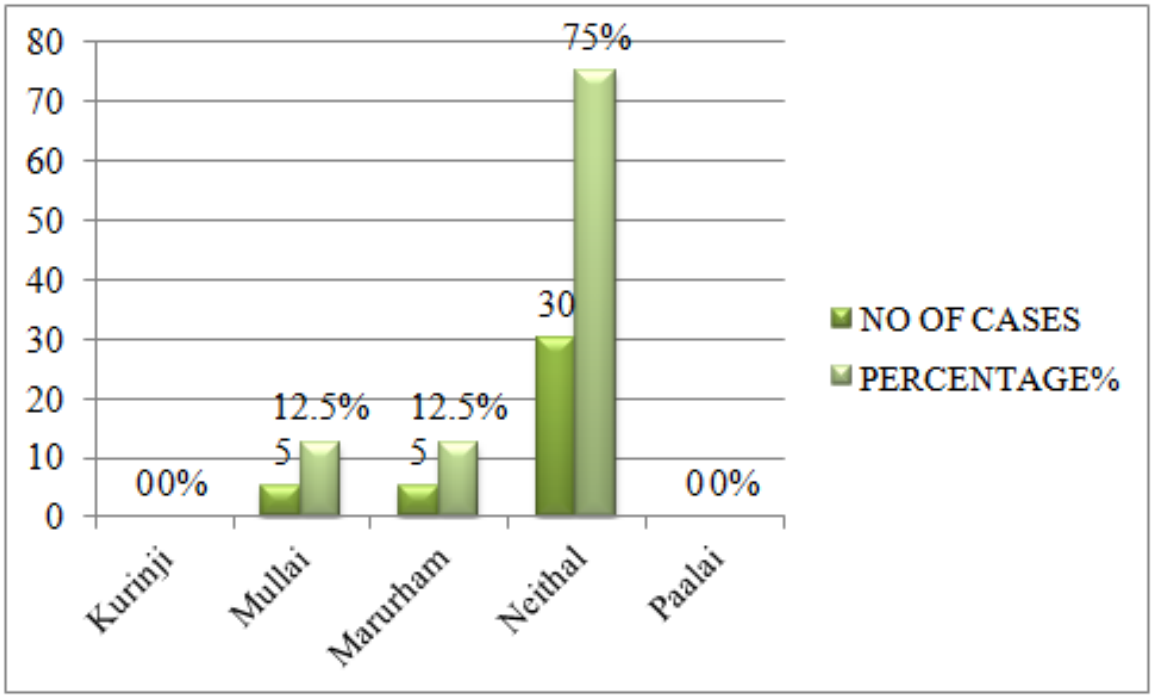


6. Thinai

THINAI	NUMBER OF CASES	PERCENTAGE%
Kurinji	-	-
Mullai	5	12.5
Marurham	5	12.5
Neithal	30	75
Paalai	-	-
total	40	100

Inference:

Among the 40 patients, 5 patients (12.5 %) were from Mullai and 5 patients (12.5 %) were from Marutham and 30 patients (75 %) from Neithal Thinai.

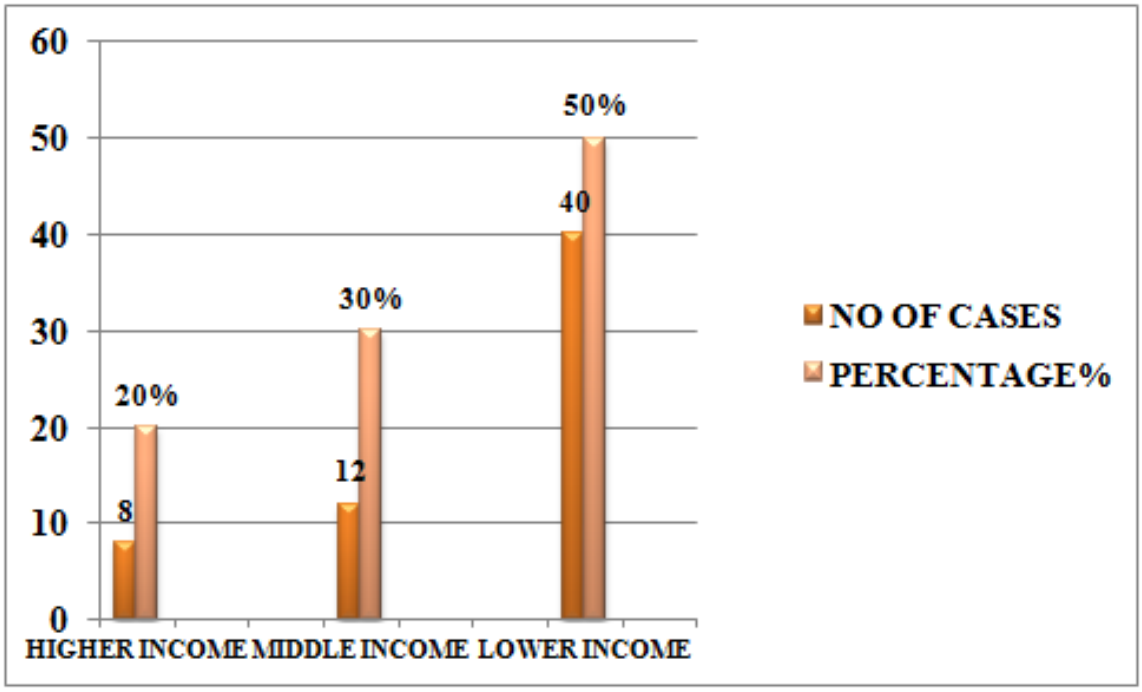


7. SOCIO- ECONOMIC STATUS

SOCIO- ECONOMIC STATUS	NUMBER OF CASES	PERCENTAGE%
HIGHER INCOME	8	20
MIDDLE INCOME	12	30
LOWER INCOME	20	50
Total	40	100

Inference:

Out of 40 cases 20% cases from upper and 30% cases were from middle class and 50% from lower class.

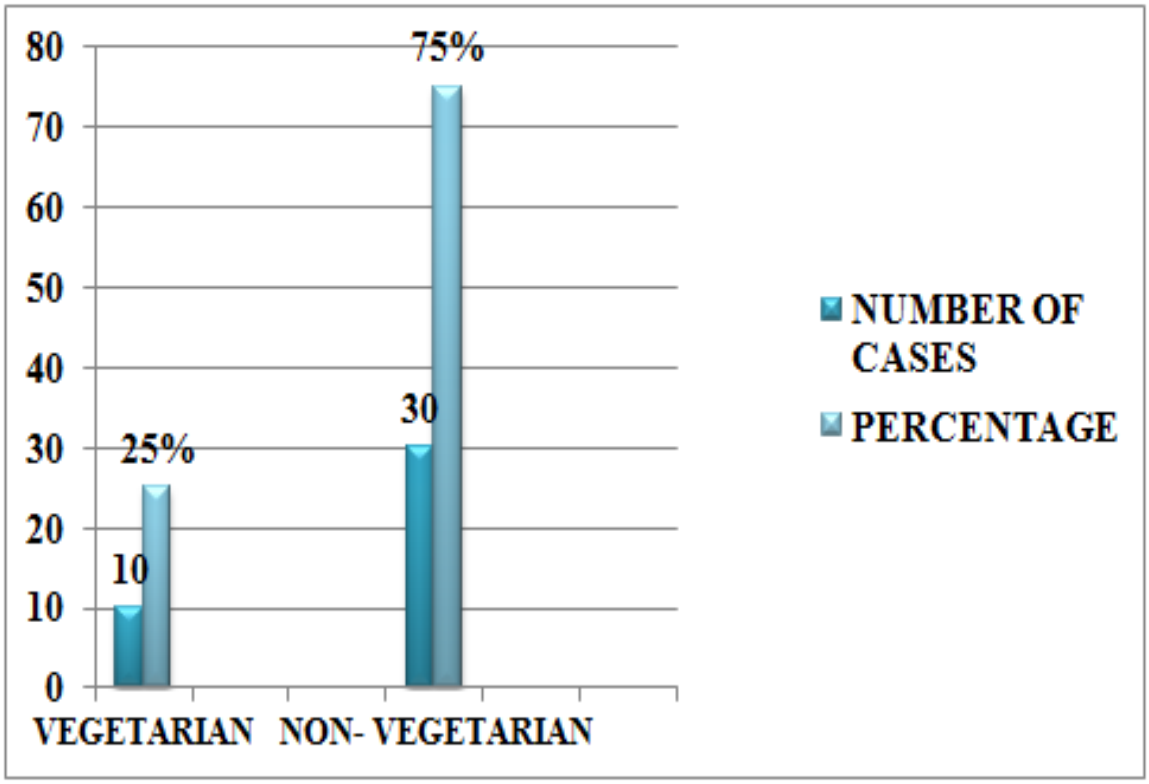


8. DIETARY HABITS:

DIETARY HABITS	NUMBER OF CASES	PERCENTAGE%
VEGETARIAN	10	25
NON- VEGETARIAN	30	75
TOTAL	40	100

Inference:

Out of 40 cases 75% of cases were Non-vegetarians and 25% of cases were Vegetarians

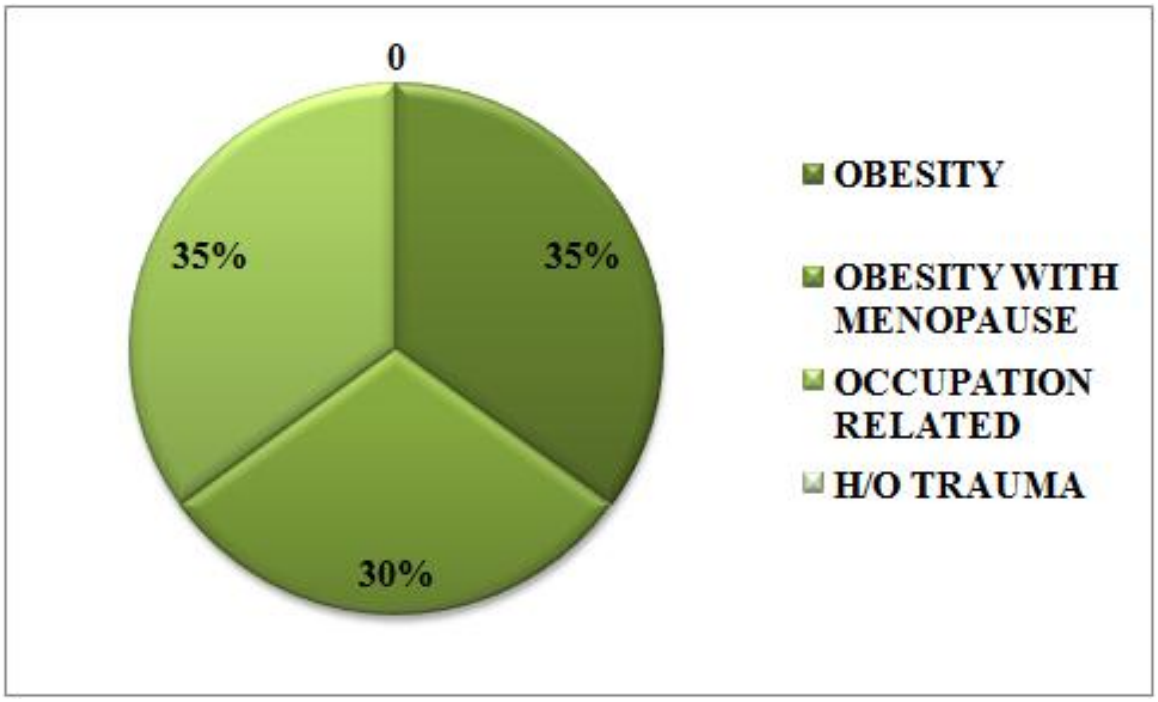


9. PRECIPITATING FACTOR

PRECIPITATING FACTOR	NUMBER OF CASES	PERCENTAGE%
OBESITY	14	35
OBESITY WITH MENOPAUSE	12	30
OCCUPATION RELATED	14	35
H/O TRAUMA	0	0
TOTAL	40	100

Inference:

Out of 40 cases 35% of cases were Obesity.



10. DISTRIBUTION OF MUKKUTRAM:

a. VAATHAM:

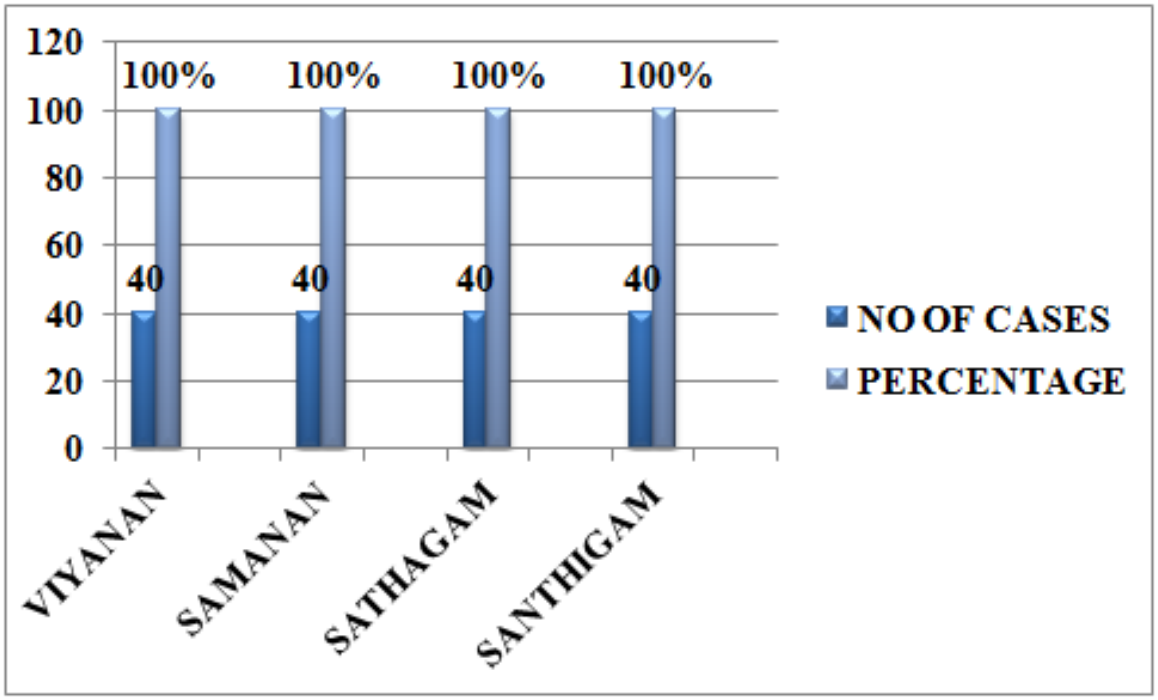
Out of 40 cases Viyanan and Samanan were affected in all the 40 patients (100%).

b. PITHAM:

Out of 40 cases saathagam was affected in almost all the 40 cases (100%)

c. KABAM:

Out of 40 cases Santhigam was affected in almost all the 40 cases (100%).

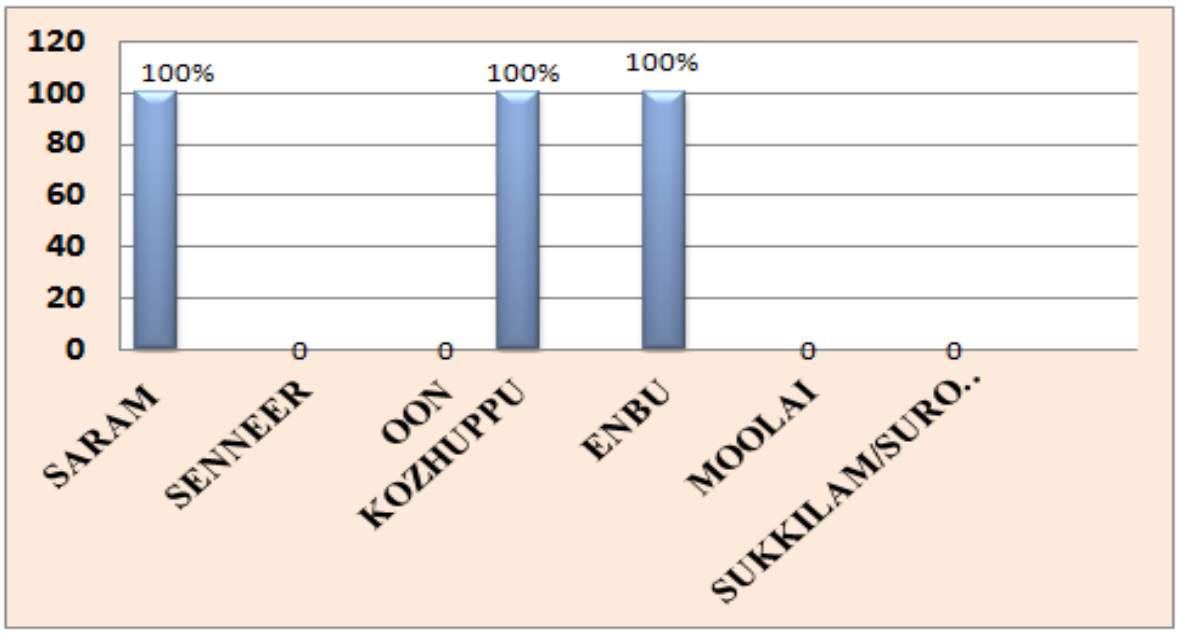


11. UDAL THATHUKKAL:

The Seven thathukkal which constitute our body structure and help to maintain the normal physiological functions get changed in Pathological conditions.

Among the 7 Udal Kattugal, Saaram , kozhuppu and Enbu were affected in all the 40 cases (100%).

UDAL THATHUKKAL	NUMBER OF CASES	PERCENTAGE%
SARAM	40	100
SENNEER	0	0
OON	0	0
KOZHUPPU	40	100
ENBU	40	100
MOOLAI	0	0
SUKKILAM/SURONITHAM	0	0



12. ENVAGAI THERVUGAL:

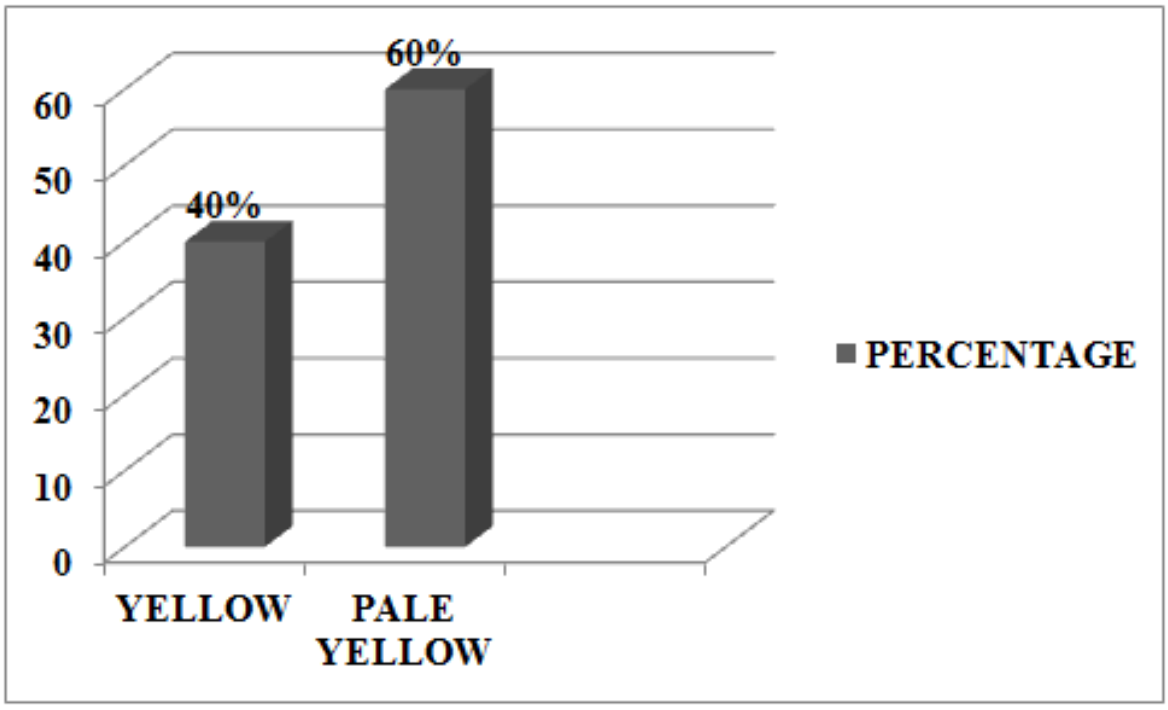
In Siddha system of Medicine, the eight types of investigative procedure were adopted for clinical approach and diagnosis. The investigations were done properly and observations were tabulated.

13. NEERKURI

NIRAM	NUMBER OF CASES	PERCENTAGE%
YELLOW	16	40
PALE YELLOW	24	60
DARK YELLOW	-	-

Inference:

Out of 40 cases, in 60% of cases urine was pale yellow in colour.

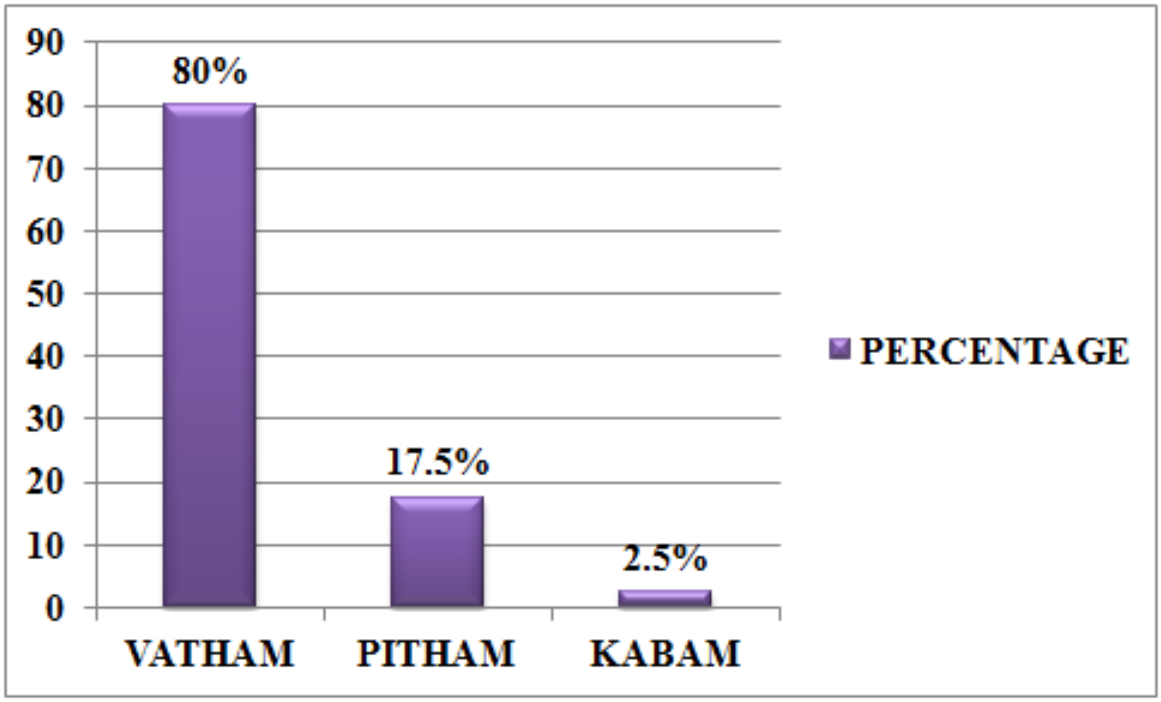


14. NEIKKURI:

NEIKKURI	NUMBER OF CASES	PERCENTAGE%
VAATHAM	32	80
PITHAM	7	17.5
KABAM	1	2.5
TOTAL	40	100

Inference:

Out of 40 cases, in 80% of cases Neikkuri was found as Vaatham.

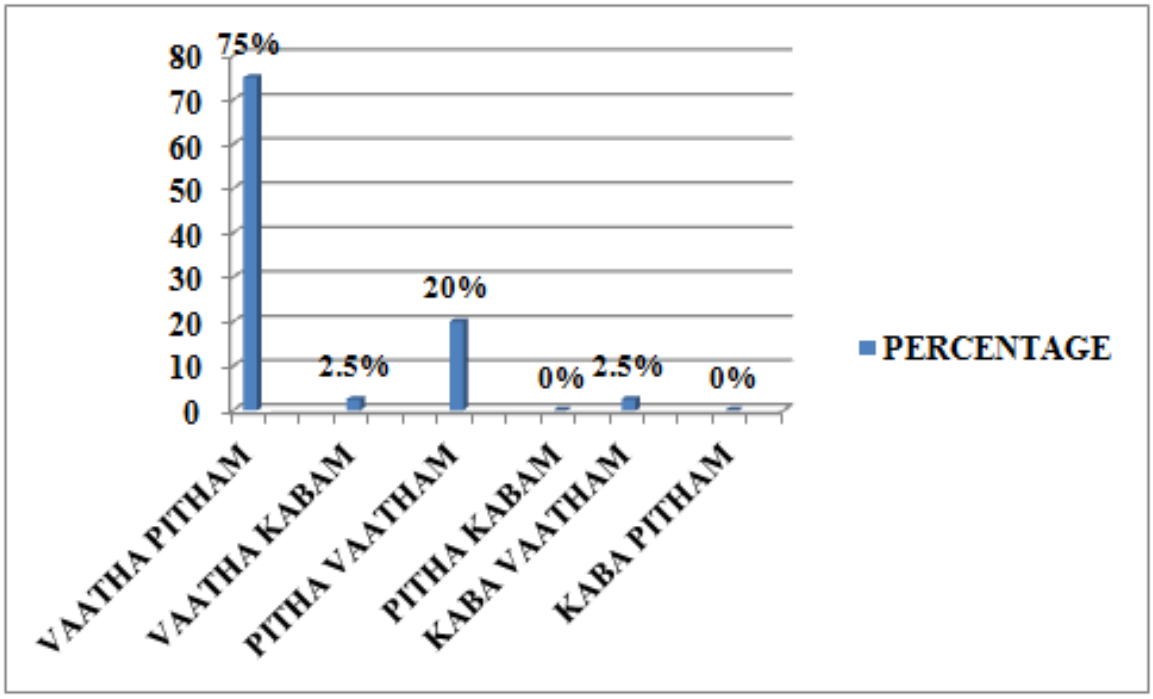


15. NAADI:

NAADI	NUMBER OF CASES	PERCENTAGE%
VAATHA PITHAM	30	75
VAATHA KABAM	1	2.5
PITHA VAATHAM	8	20
PITHA KABAM	-	-
KABA VAATHAM	1	2.5
KABA PITHAM	-	-
TOTAL	40	100

Inference:

Among 40 cases, vaathapitham naadi was found in 30patients, 8 were found in Pithavaatham and Vaathakabam, Kabavaatham for each 1 cases.

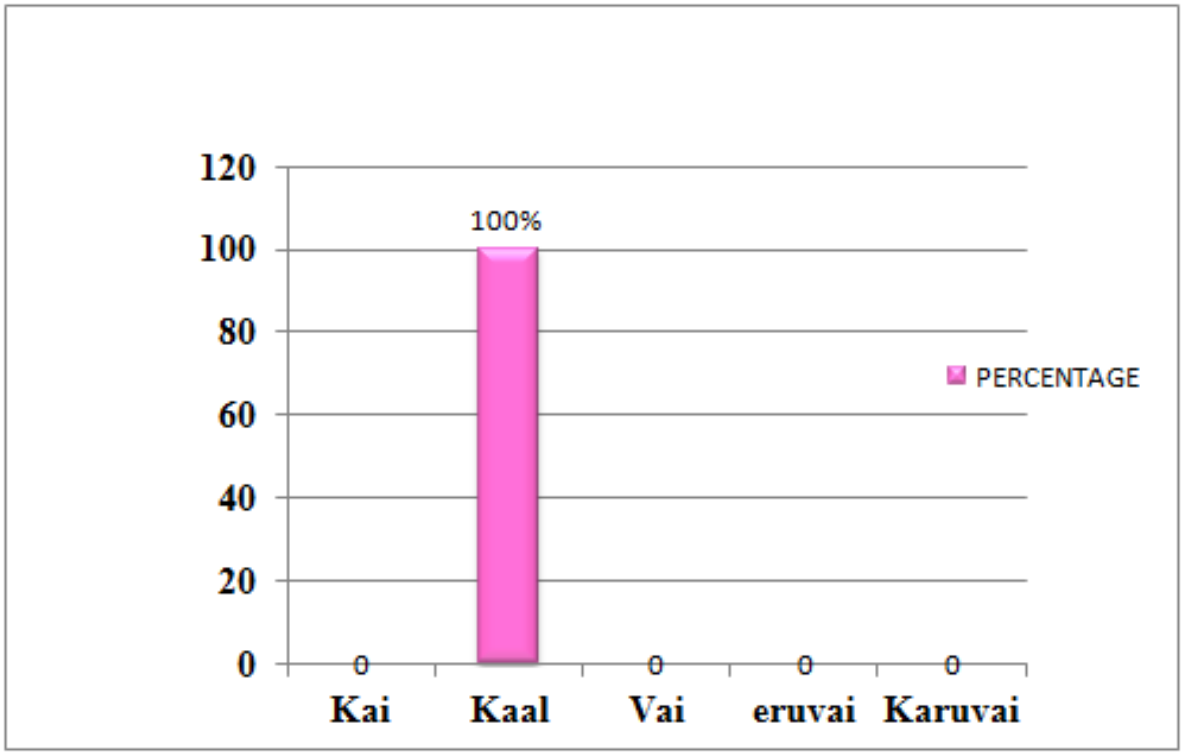


16. DISTURBANCES IN KANMENTHIRIYAM:

KANMENDRIYAM	NUMBER OF CASES	PERCENTAGE%
Kai	0	0
Kaal	40	100
Vai	0	0
Eruvai	0	0
Karuvai	0	0
total	40	100

Inference:

Kaal was affected in all the 40 cases (100 %)

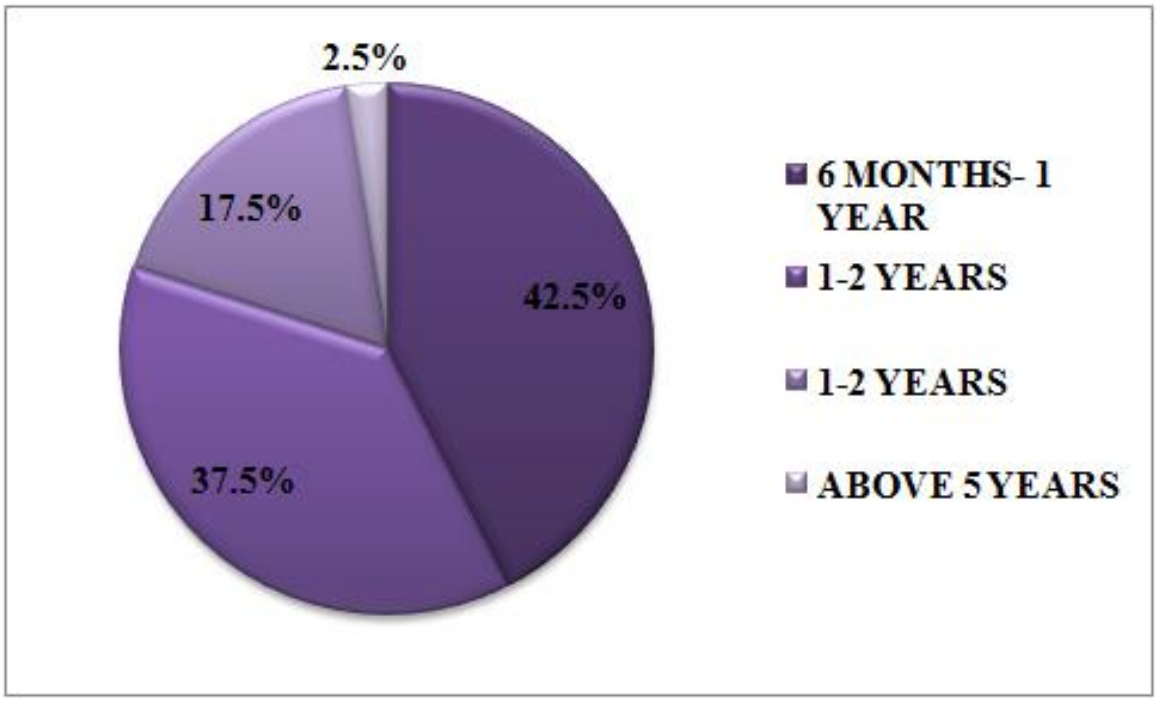


17.DURATION OF ILLNESS

DURATION OF ILLNESS	NUMBER OF CASES	PERCENTAGE%
6 MONTHS- 1 YEAR	17	42.5
1-2 YEARS	15	37.5
2-3 YEARS	7	17.5
ABOVE 5 YEARS	1	2.5
total	40	100

Inference:

Among the 40 patients 17 patients were under 6 months to 1 year duration.

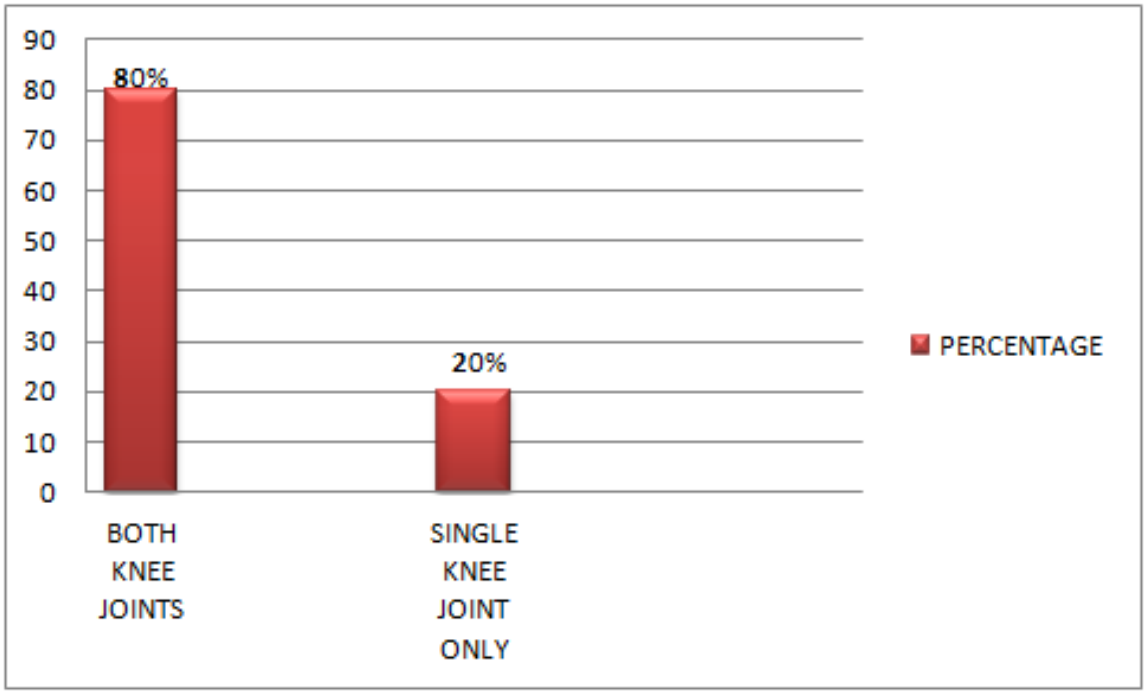


18. INVOLVEMENT OF KNEE JOINTS:

INVOLVEMENT OF KNEE JOINTS	NUMBER OF CASES	PERCENTAGE%
BOTH KNEE JOINTS	32	80
SINGLE KNEE JOINT ONLY	8	20
TOTAL	40	100

Inference:

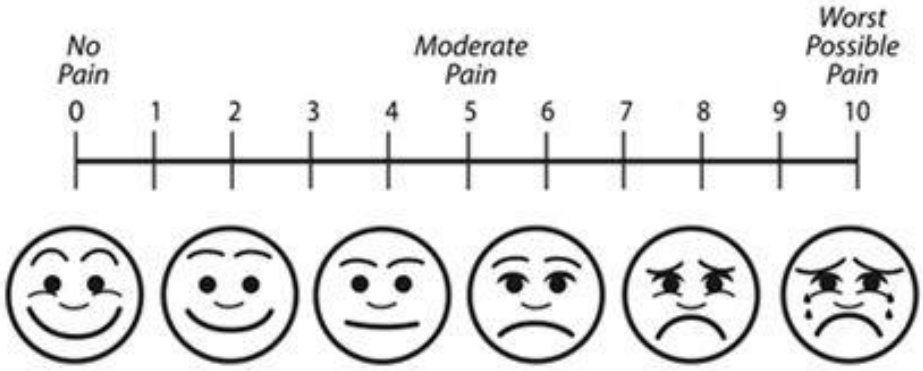
Out of 40 cases both knee joints were affected in 32patients (80%).



1. UNIVERSAL PAIN ASSESMENT SCALE:

Pain Intensity Scale: 0 to 10

(from Simkin, P. (2010), Pain Medications for Labor & Birth (PowerPoint). Waco, Childbirth Graphics



A. 0: No Pain

B. 1 -3: Mild pain

C. 4-6: Moderate pain

D.7-9: Severe pain

E.10: Worst possible pain

2. RESTRICTED MOVEMENT ASSESSMENT SCALE:

Gradation of movements:

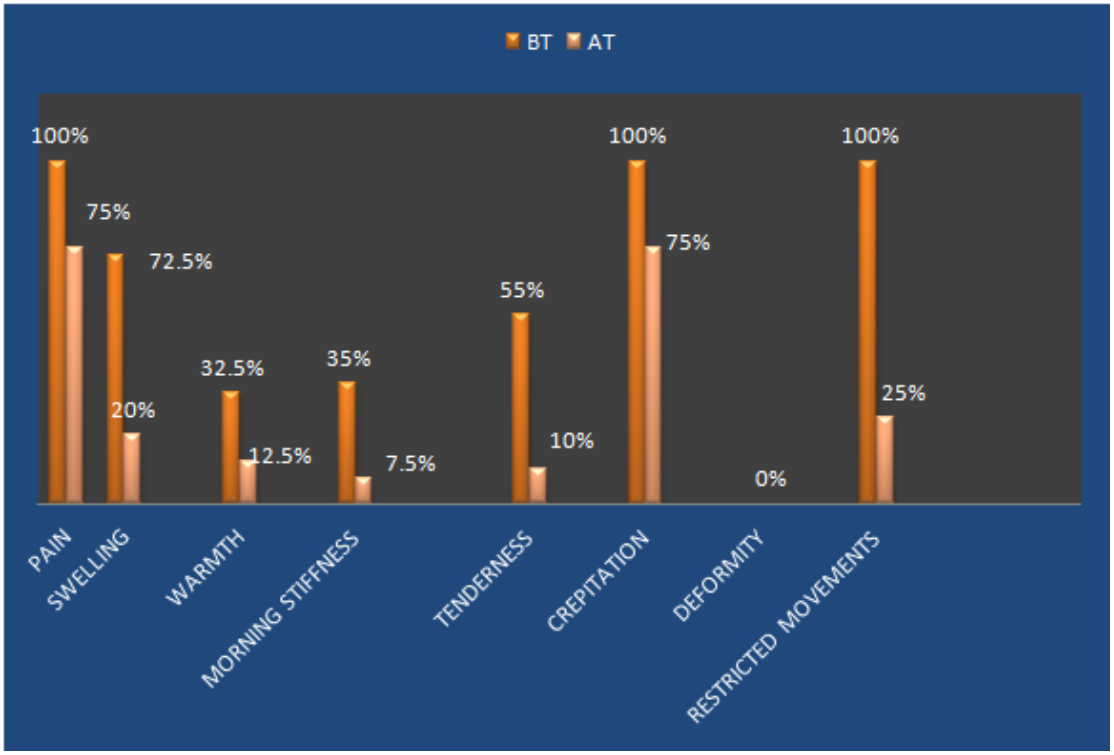
- Grade 1 - Fit for all activities, do their work without support.
- Grade II - Mild pain present in knee joint, mild restricted movements.
- Grade III - Pain present in knee joint, moderate restriction of movements.
- Grade IV - Severe pain, bed ridden.

(Ref: Clinical manual for nursing practice (National Institute of Health Warren Grant Magnuson Clinical Centre)

19. CLINICAL FEATURES.BT/AT

CLINICAL FEATURES	BT	AT	BT(%)	SYMPTOMS REDUCED	AT(%)
PAIN	40	10	100	30	75
SWELLING	29	8	72.5	21	20
WARMTH	13	5	32.5	8	12.5
MORNING STIFFNESS	14	3	35	11	7.5
TENDERNESS	22	4	55	18	10
CREPITATION	40	30	100	10	75
DEFORMITY	-	-	-	-	-
RESTRICTED MOVEMENTS	40	10	100	30	25

Inference: Out of 40 cases, Restriction of movement reduced for 30 cases.

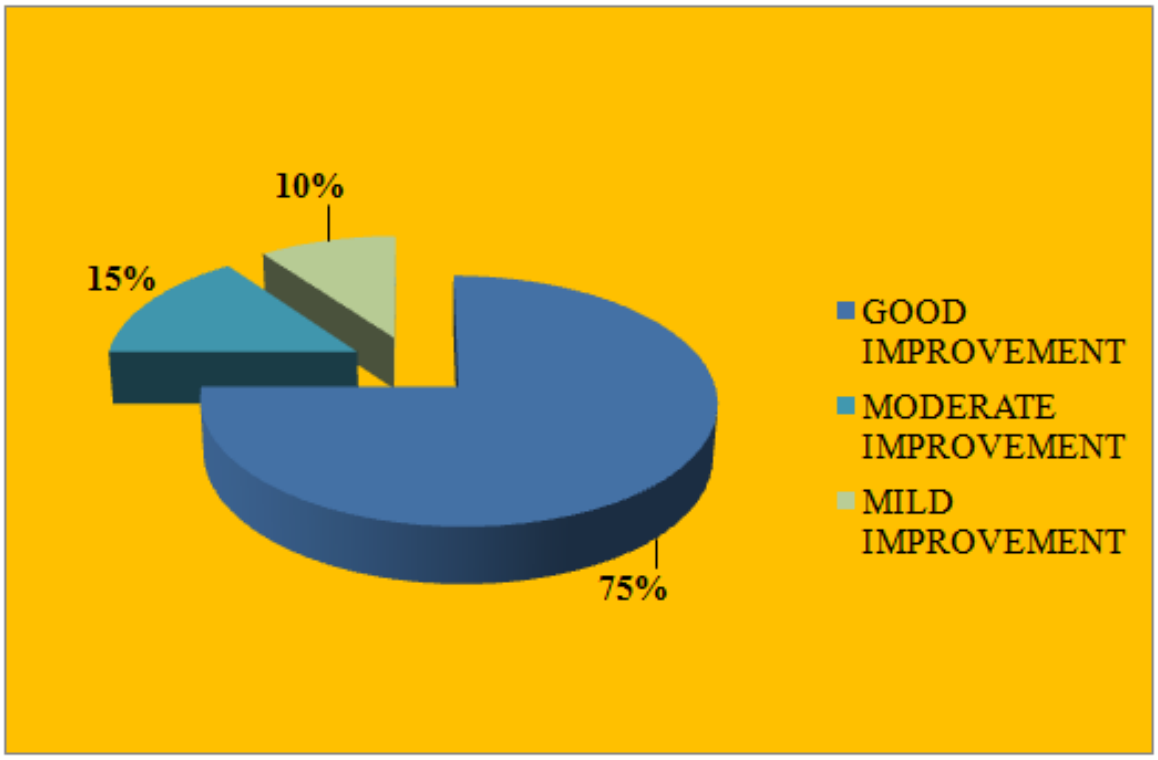


20. RESULTS – AFTER TREATMENT-PAIN SCORE

RESULT	NUMBER OF CASES	PERCENTAGE%
GOOD IMPROVEMENT	30	75
MODERATE IMPROVEMENT	6	15
MILD IMPROVEMENT	4	10
TOTAL	40	100

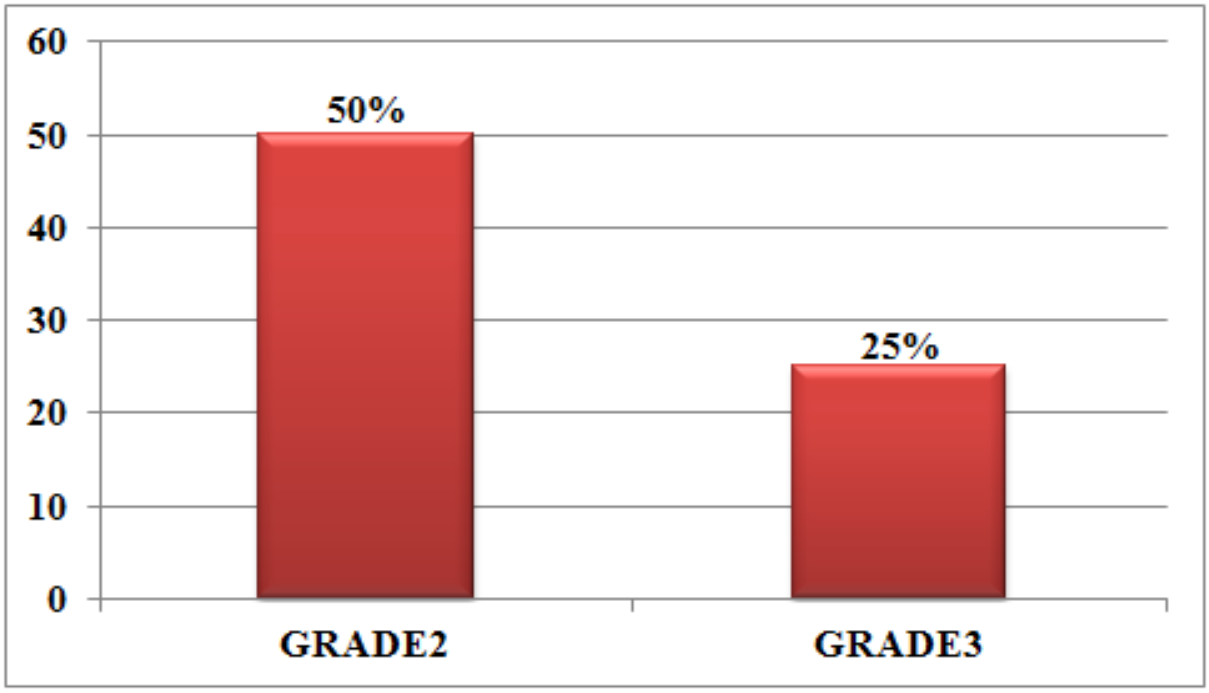
Inference:

Out of 40 cases, good improvement was observed in 30 patients, moderate improvement in 6 patients, and mild improvement in 4 patients.



21. SECONDARY OUTCOME-. RESTRICTED MOVEMENT ASSESSMENT SCALE

RESULT	NUMBER OF CASES		PERCENTAGE%	
	BT	AT	BT	AT
GRADE1	0	0	0	0
GRADE 2	24	20	60	50
GRADE3	16	10	40	25
GRADE 4	0	0	0	0
TOTAL	40	30	100	75



Inference:

Out of 40 cases, restriction of movement reduced for 30 cases (75%).

IPD CASES CLINICAL IMPROVEMENT

Sl.NO	IP NO	AGE	SEX	DOA	DOD	PAIN SCORE		IMPROVEMENT
						BT	AT	
1	7513	50	F	11.12.15	27.12.15	3	0	GOOD
2	7516	49	F	13.12.15	29.12.15	6	1	MODERATE
3	7537	52	F	20.12.15	5.1.16	7	0	GOOD
4	7603	53	F	21.12.15	6.1.16	5	0	GOOD
5	7621	55	F	28.12.15	13.1.16	2	0	GOOD
6	7625	45	F	8.1.16	24.1.16	9	4	MILD
7	7671	50	F	9.1.16	25.1.16	8	0	GOOD
8	7817	50	F	13.1.16	29.1.16	5	0	GOOD
9	7932	49	F	13.1.16	29.1.16	6	1	MODERATE
10	7941	56	F	25.1.16	11.1.16	7	0	GOOD

OPD CASES CLINICAL IMPROVEMENT

Sl.	OP NO	AGE	SEX	PAIN SCORE		IMPROVEMENT
				BT	AT	
11	H15914	59	M	6	0	GOOD
12	H16062	45	F	5	0	GOOD
13	H16214	59	M	1	0	GOOD
14	H16712	52	F	7	0	GOOD
15	H16756	47	F	4	0	GOOD
16	H16912	56	M	2	2	MODERATE
17	H17115	49	M	6	0	GOOD
18	H19071	53	F	8	0	GOOD
19	H19442	48	M	4	0	GOOD

20	H19489	52	F	3	0	GOOD
21	H21084	45	M	9	5	MILD
22	H21399	58	F	6	0	GOOD
23	H21836	59	F	1	0	GOOD
24	H22560	58	M	6	0	GOOD
25	H23059	49	F	7	2	MODERATE
26	H23060	60	M	5	0	GOOD
27	H29115	57	F	3	0	GOOD
28	H29292	55	F	4	0	GOOD
29	H29300	55	M	7	0	GOOD
30	H29571	60	M	6	6	MILD
31	H29914	48	F	2	0	GOOD
32	H35873	50	F	5	0	GOOD
33	H37384	55	M	8	6	MILD
34	H41531	55	F	5	0	GOOD
35	H42222	41	M	5	1	MODERATE
36	H45398	50	F	6	0	GOOD
37	H46888	55	F	5	0	GOOD
38	H47892	57	F	9	0	GOOD
39	H51842	54	F	2	0	GOOD
40	H52221	58	F	7	2	MODERATE

INVESTIGATIONS BEFORE AND AFTER TREATMENT – IP AND OP PATIENTS

SL.NO	IP NO/OP NO	AGE	SEX	Hb gm%		TRBC Million/cumm	
				Before Treatment	After treatment	Before treatment	After Treatment
1	7513	50	F	10	11.1	4.3	4.4
2	7516	49	F	11.1	12.2	4.8	4.9
3	7537	52	F	13	12.1	4	4.3
4	7603	53	F	13.6	13.6	4.1	4.2
5	7621	55	F	12.3	11.3	4.3	4.4
6	7625	45	F	13	13.2	4.2	4
7	7671	50	F	12.1	13.2	5.4	4.4
8	7817	50	F	12.8	13.1	4.7	4.9
9	7932	49	F	12.4	13.3	5.1	5.2
10	7941	56	F	13.1	13.2	5.0	4.5
11	H15914	59	M	16	15.3	4.7	4.9
12	H16062	45	F	11.3	14.2	4.4	4.6
13	H16214	59	M	14.3	14.1	4.3	4.7
14	H16712	52	F	13.6	13.7	4.5	4.3
15	H16756	47	F	11.2	13.5	5.1	5
16	H16912	56	M	15.2	16.1	4.3	4.4
17	H17115	49	M	16.1	16.2	4.7	4.5
18	H19071	53	F	11.2	11.5	4.9	4.8
19	H19442	48	M	14.6	15.2	4.6	4.8
20	H19489	52	F	12.1	13.7	5.06	4.9

HB AND RBC – INVESTIGATIONS BEFORE AND AFTER TREATMENT – IN OPD

S.NO	OPNO	AGE	SEX	Hb gm%		TRBC Million/cumm	
				Before Treatment	After treatment	Before treatment	After Treatment
21	H21084	45	M	13.2	13.5	4.9	4.5
22	H21399	58	F	13	13.4	4.5	4.7
23	H21836	59	M	13.1	13.4	4.6	4.4
24	H22560	58	F	11.7	12.3	4.2	4.2
25	H23059	49	F	12.3	13.4	4.7	4.9
26	H23060	60	M	12.7	13.3	4.2	4.4
27	H29115	57	M	15.5	15.8	6.6	6.8
28	H29292	55	F	10.3	11.1	4.7	4.6
29	H29300	55	M	14.6	15.3	5.1	5
30	H29571	60	F	13.3	13.6	4.9	4.6
31	H29914	48	F	9.4	10.5	4	4.3
32	H35873	50	F	10.4	11.2	5.4	4.9
33	H37384	55	M	11	11.1	4.6	4.6
34	H41531	55	F	13.3	13.5	4.2	4.1
35	H42222	41	M	11.5	11.6	4.1	4.2
36	H45398	50	F	12.5	13.5	4.4	3.8
37	H46888	55	F	10.7	11	4.8	4.8
38	H47892	57	F	12.8	12.7	4.6	4.4
39	H51842	54	F	12.9	13	4.8	4.8
40	H52221	58	F	13.4	13.2	4.6	4.5

CHOLESTEROL PROFILE OF THE IP AND OP PATIENTS (BEFORE AND AFTER TREATMENT)

S.NO	IP NO /OPNO	T.CHOLESTEROL (mg/dl)		HDL (mg/dl)		LDL (mg/dl)		VLDL (mg/dl)		TGL (mg/dl)	
		BT	AT	BT	AT	BT	AT	BT	AT	BT	AT
1	7513	200	198	38	51	110	66	26	34	178	160
2	7516	172	171	45	59	94	98	26	23	79	79
3	7537	189	196	38	45	92	94	17	16	134	80
4	7603	183	182	38	41	92	96	22	34	104	98
5	7621	191	170	39	40	93	88	10	18	106	143
6	7625	170	177	38	40	91	88	26	26	116	118
7	7671	198	182	38	37	86	93	34	17	116	127
8	7817	199	193	38	36	116	107	11	22	73	117
9	7932	165	193	46	42	91	87	54	10	101	109
10	7941	190	186	140	47	88	83	29	26	150	135
11	H15914	176	152	37	33	116	105	29	34	85	156
12	H16062	187	168	27	41	108	96	35	11	75	98
13	H16214	148	146	32	36	128	108	22	26	136	132
14	H16712	195	183	35	46	77	73	17	23	112	58
15	H16756	181	169	134	78	128	94	26	21	110	126
16	H16912	133	123	35	33	117	123	22	35	135	145
17	H17115	199	176	49	46	69	87	18	27	96	137
18	H19071	249	197	44	42	53	56	24	38	83	142
19	H19442	199	180	47	47	135	124	19	19	73	118
20	H19489	187	172	47	42	51	62	19	24	110	152

CHOLESTEROL PROFILE OF THE OPD PATIENTS (BEFORE AND AFTER TREATMENT)

S.NO	OP NO	T.CHOLESTEROL (mg/dl)		HDL (mg/dl)		LDL (mg/dl)		VLDL (mg/dl)		TGL (mg/dl)	
		BT	AT	BT	AT	BT	AT	BT	AT	BT	AT
21	H21084	178	154	47	37	67	86	21	18	103	73
22	H21399	175	166	53	33	106	102	16	18	79	152
23	H21836	207	196	35	37	93	77	13	19	66	138
24	H22560	233	196	46	33	99	110	23	25	115	149
25	H23059	135	120	48	34	92	91	31	33	154	51
26	H23060	180	156	38	39	88	82	25	22	123	63
27	H29115	155	152	40	41	109	110	13	12	66	110
28	H29292	170	186	50	34	101	98	30	29	152	78
29	H29300	197	172	46	45	87	89	28	32	106	71
30	H29571	141	180	35	41	114	110	30	26	116	110
31	H29914	183	171	30	38	93	92	10	12	143	143
32	H35873	147	134	36	34	88	87	12	15	110	118
33	H37384	210	198	42	53	76	78	15	17	69	68
34	H41531	223	220	38	45	120	118	31	30	132	149
35	H42222	160	172	46	67	87	58	24	18	142	136
36	H45398	200	196	40	46	112	67	21	18	119	130
37	H46888	182	190	36	56	68	115	25	19	112	56
38	H47892	140	142	38	48	75	130	16	25	87	65
39	H51842	125	127	40	36	94	126	32	33	73	74
40	H52221	206	200	33	48	123	69	36	22	159	156

BLOOD INVESTIGATIONS BEFORE AND AFTER TREATMENT- IP AND OP PATIENTS

S. NO	IP. NO/ OP. NO	TC (million/ cu.mm)		DC (%)								ESR			
				N		L		E		Mxd		½ HR		1 HR	
		BT	AT	BT	AT	BT	AT	BT	AT	BT	AT	BT	AT	BT	AT
1	7513	6100	7200	55	38	35	45	-	-	10	17	16	4	32	10
2	7516	6800	6700	70	56	26	34	-	-	4	10	4	4	18	4
3	7537	5300	6400	53	67	35	22	-	-	12	11	2	2	16	6
4	7603	6200	5400	41	55	53	36	-	-	6	9	2	2	14	2
5	7621	8600	9700	62	68	32	32	-	-	6	10	24	24	52	32
6	7625	5200	6600	60	52	30	34	-	-	10	14	6	6	18	2
7	7671	6300	7600	57	63	34	31	-	-	9	6	12	2	42	8
8	7817	4800	5600	70	62	27	32	-	-	3	6	14	10	48	10
9	7932	9200	8200	43	56	42	39	-	-	5	8	22	8	14	4
10	7941	5200	5400	58	72	37	21	-	-	5	7	16	4	18	8
11	H15914	6700	3100	69	71	25	25	-	-	4	4	12	2	48	6
12	H16062	8700	7600	60	66	36	29	-	-	4	5	8	2	18	20
13	H16214	5600	6500	54	68	37	21	-	-	9	11	20	6	16	6
14	H16712	5600	7200	48	49	37	36	-	-	15	11	24	2	44	4
15	H16756	6700	5800	65	63	30	30	-	-	5	7	2	2	6	4
16	H16912	5900	9700	54	57	38	38	-	-	9	5	8	6	22	10
17	H17115	5800	4100	57	68	30	28	-	-	13	4	10	4	68	24
18	H19071	7500	7800	51	52	37	37	-	-	12	11	32	2	44	4
19	H19442	5200	7200	55	64	40	32	-	-	5	4	16	3	16	4
20	H19489	7500	8800	62	57	30	29	-	-	7	14	14	2	18	6

BLOOD INVESTIGATIONS BEFORE AND AFTER TREATMENT- OP PATIENTS

S. NO	OP. NO	TC (million/ cu.mm)		DC (%)								ESR			
				N		L		E		Mxd		½ HR		1 HR	
		BT	AT	BT	AT	BT	AT	BT	AT	BT	AT	BT	AT	BT	AT
21	H21084	9100	8600	59	58	36	36	-	-	4	6	2	2	4	2
22	H21399	4500	6700	55	56	33	36	-	-	8	6	6	4	4	2
23	H21836	6800	7800	71	63	21	34	-	-	3	4	4	2	6	4
24	H22560	5400	4500	67	62	28	28	-	-	10	8	2	2	10	4
25	H23059	5600	6100	56	59	35	30	-	-	11	3	2	4	22	8
26	H23060	8500	5400	52	56	40	38	-	-	6	6	4	6	26	6
27	H29115	7800	7800	52	54	41	39	-	-	7	7	4	8	18	6
28	H29292	6700	9800	65	65	19	31	-	-	4	6	8	6	12	4
29	H29300	6300	11000	59	64	32	29	-	-	7	8	22	10	8	4
30	H29571	5400	8600	46	63	41	31	-	-	13	6	16	8	10	6
31	H29914	7100	7200	58	71	29	21	-	-	3	8	2	2	34	8
32	H35873	9300	5300	67	50	30	40	-	-	3	10	18	10	20	10
33	H37384	11000	4600	57	48	36	38	-	-	7	14	4	4	14	10
34	H41531	4600	7600	46	59	45	37	-	-	9	4	8	4	4	2
35	H42222	8400	8900	57	57	33	40	-	-	10	3	4	2	2	2
36	H45398	6400	9000	68	67	29	27	-	-	3	6	4	2	18	6
37	H46888	7200	9600	65	62	27	28	-	-	8	10	20	10	22	8
38	H47892	4300	5700	53	63	35	31	-	-	12	6	2	4	42	8
39	H51842	9200	6800	65	72	26	20	-	-	9	8	6	4	24	6
40	H52221	6300	7200	68	63	26	35	-	-	6	2	4	2	8	2

SERUM BILIRUBIN & GLUCOSE PROFILE
BEFORE AND AFTER TREATMENT – IP AND OP PATIENTS

Sl. No	IP N/OP .NO	Serum bilirubin (mg/dl)						GLUCOSE PROFILE			
		Direct		Indirect		Total		FAST		P.P.	
		BT	AT	BT	AT	BT	AT	BT	AT	BT	AT
1	7513	0.2	0.2	0.2	0.1	0.3	0.6	99	98	112	123
2	7516	0.1	0.1	0.4	0.2	0.3	0.2	86	90	98	109
3	7537	0.4	0.2	0.5	0.1	0.4	0.2	102	100	116	122
4	7603	0.5	0.2	0.7	0.3	0.4	0.7	78	80	115	121
5	7621	0.2	0.1	0.3	0.1	0.4	0.6	89	88	123	133
6	7625	0.2	0.1	0.3	0.1	0.5	0.4	96	97	98	108
7	7671	0.2	0.1	0.1	0.1	0.6	0.3	78	79	88	121
8	7817	0.3	0.2	0.1	0.1	0.6	0.2	67	68	104	114
9	7932	0.1	0.1	0.2	0.2	0.3	0.3	69	68	108	112
10	7941	0.4	0.2	0.4	0.2	0.6	0	78	80	132	108
11	H15914	0.1	0.2	0.6	0.3	0.5	0.5	97	96	128	110
12	H16062	0.2	0.3	0.6	0.2	0.4	0.4	79	108	118	110
13	H16214	0.2	0.2	0.1	0.2	0.4	0.4	103	65	120	108
14	H16712	0.1	0.2	0.2	0.3	0.4	0.6	72	102	104	112
15	H16756	0.1	0.1	0.5	0.4	0.5	0.5	105	101	106	122
16	H16912	0.5	0.1	0.2	0.3	0.6	0.3	68	100	101	110
17	H17115	0.4	0.3	0.3	0.3	0.2	0.4	90	99	108	0
18	H19071	0.3	0.2	0.4	0.2	0.7	0.4	104	87	-	106
19	H19442	0.2	0.1	0.5	0.4	0.6	0.4	88	76	104	112
20	H19489	0.1	0.1	0.6	0.4	0.4	0.2	69	87	108	111

SERUM BILIRUBIN & GLUCOSE PROFILE
BEFORE AND AFTER TREATMENT - OP PATIENTS

Sl. No	OP NO	Serum bilirubin (mg/dl)						GLUCOSE PROFILE			
		Direct		Indirect		Total		FAST		P.P.	
		BT	AT	BT	AT	BT	AT	BT	AT	BT	AT
21	H21084	0.5	0.2	0.2	0.3	0.6	0.4	92	96	103	99
22	H21399	0.5	0.2	0.2	0.2	0.2	0.3	91	102	110	88
23	H21836	0.5	0.3	0.3	0.2	0.3	0.2	106	102	118	102
24	H22560	0.6	0.5	0.3	0.4	0.7	0.3	90	98	110	103
25	H23059	0.4	0.5	0.2	0.2	0.4	0	91	85	110	101
26	H23060	0.6	0.3	0.4	0.3	0.4	0.5	96	101	110	103
27	H29115	0	0.2	0.4	0.3	0.5	0.4	93	96	118	82
28	H29292	0.7	0.7	0.2	0.3	0.6	0.4	84	86	110	103
29	H29300	0.8	0.6	0.2	0.3	0.6	0.9	91	96	118	105
30	H29571	0.5	0.3	0.2	0.2	0.5	0.7	105	96	107	110
31	H29914	0.8	0.6	0.2	0.3	0.3	0.2	89	84	112	109
32	H35873	0.8	0.7	0.2	0	0.4	0.6	96	100	98	76
33	H37384	0.7	0.9	0.2	0.1	0.4	0.5	91	98	116	98
34	H41531	0.5	0.7	0.2	0.2	0.4	0.8	79	81	115	112
35	H42222	0.8	0.7	0.2	0.2	0.5	0.7	91	105	123	147
36	H45398	0.7	0.9	0.3	0.2	0.7	05	106	98	98	106
37	H46888	0.7	1	0.2	0.2	0.6	0.2	88	89	88	120
38	H47892	0.7	0.4	0.2	0.1	0.4	0.3	94	96	104	118
39	H51842	0.8	0.6	0.2	0.1	0.4	0.7	89	97	108	130
40	H52221	0.3	1	0.3	0.2	0.5	0.9	99	90	98	117

LIVER FUNCTION TESTS BEFORE AND AFTER TREATMENT - IP AND OP PATIENTS

Sl. No	IP NO/OP NO	SGOT (IU/dl)		SGPT (IU/dl)		Al.pho (U/dl)		Albumin (g/dl)		Globulin (g/dl)		T. Protein (g/dl)	
		BT	AT	BT	AT	BT	AT	BT	AT	BT	AT	BT	AT
1	7513	18	17	14	15	75	73	4.5	4.3	2.2	2.1	6.7	6.3
2	7516	21	20	19	20	94	92	4.7	4.1	2.7	2.5	7.4	7.3
3	7537	26	27	29	28	102	83	4.3	4.2	2.9	2.8	7.1	7
4	7603	25	80	30	23	75	69	4.0	3.5	2.5	3.0	6.5	6.5
5	7621	15	16	10	10	93	91	5.2	4.9	2.4	2.7	7.9	7.5
6	7625	16	18	9	12	82	89	4.7	4.6	2.8	2.7	7.5	7.6
7	7671	18	19	12	17	95	103	4.8	4.3	2.5	2.4	7.2	6.7
8	7817	13	18	17	15	96	94	3.5	3.6	2.7	2.6	6.2	6.2
9	7932	19	0	21	0	107	105	4.0	0	2.3	0	6.3	0
10	7941	19	18	20	19	101	87	4.2	3.5	3.1	3.0	7.3	6.5
11	H15914	15	18	8	16	82	91	4.1	4.0	2.5	2.4	6.6	6.4
12	H16062	15	18	8	16	83	92	4.1	4.0	2.5	2.4	6.6	6.4
13	H16214	22	24	28	26	111	98	4.1	4.0	2.1	2.1	6.2	6.1
14	H16712	23	24	26	25	117	110	3.9	3.8	2.4	2.4	6.3	6.2
15	H16756	36	33	37	31	94	88	4.2	3.5	2.2	2	7.4	6
16	H16912	19	20	27	25	109	113	3.3	3.1	3.0	3.0	6.3	6.1
17	H17115	17	22	14	18	77	85	5.0	4.0	2.1	2.3	7.1	6.8
18	H19071	19	20	15	18	82	86	4.6	4.2	2.2	2.4	6.8	6.6
19	H19442	18	19	16	14	86	98	4.3	2.3	3	3.1	5.4	7.1
20	H19489	18	17	15	16	99	110	4.1	4	3.1	3.1	7.2	7.1

LIVER FUNCTION TESTS BEFORE AND AFTER TREATMENT - OPATIENTS

Sl. No	OP NO	SGOT (IU/dl)		SGPT (IU/dl)		Al.pho (U/dl)		Albumin (g/dl)		Globulin (g/dl)		T. Protein (g/dl)	
		BT	AT	BT	AT	BT	AT	BT	AT	BT	AT	BT	AT
21	H21084	18	19	19	22	82	92	3.0	3.1	3.4	3.2	6.4	6.3
22	H21399	14	20	16	18	1z8	119	4.2	3.9	2.6	2.4	6.8	6.3
23	H21836	22	24	26	24	73	112	3.8	3.7	3.5	2.9	6.3	6.4
24	H22560	14	19	10	14	78	108	4.5	4.6	2.9	2.8	7.4	7.4
25	H23059	14	15	11	12	73	87	4.0	4.1	2.3	2.3	6.3	6.4
26	H23060	18	18	14	14	98	97	4.1	4.2	2.2	2.0	6.3	6.2
27	H29115	17	16	14	13	88	89	4.8	4.7	2.2	2.6	7.0	7.3
28	H29292	19	18	24	24	86	96	4.3	4.0	3.3	3.0	7.6	7.0
29	H29300	22	28	25	2.3	87	98	4.1	4.1	2.7	2.6	6.8	6.7
30	H29571	16	15	19	18	90	95	4.1	4.2	2.8	2.9	7.0	7.1
31	H29914	19	20	14	15	75	82	4.3	4.2	3.5	2.6	7.8	6.8
32	H35873	14	0	17	0	85	0	4.0	0	3.4	0	7.4	0
33	H37384	17	18	19	20	92	97	3.8	3.7	2.6	1.9	6.4	5.7
34	H41531	22	21	25	24	91	97	3.3	3.4	3.2	3.0	6.5	6.4
35	H42222	15	16	21	20	115	114	3.2	3.1	3.1	2.0	6.3	5.1
36	H45398	14	14	19	19	79	85	3.6	3.2	3.0	3.1	6.6	6.3
37	H46888	16	15	24	25	106	102	3.4	3.2	3.0	2.9	6.4	6.1
38	H47892	16	17	18	20	83	86	3.0	3.1	3.0	3.0	6.0	6.1
39	H51842	14	15	16	15	85	87	3.1	3.0	2.7	2.6	5.8	5.6
40	H52221	14	15	20	22	93	94	3.9	3.5	2.6	2.6	6.5	6.1

URINE EXAMINATION BEFORE AND AFTER TREATMENT – IP PATIENTS

S. NO	IP NO/OP NO	URINE							
		Before Treatment				After Treatment			
		Albumin	Sugar	Deposits		Albumin	Sugar	Deposits	
				Pus Cells	Epi. cells			Pus Cells	Epi. cells
1	7513	NIL	NIL	1-2	2-3	NIL	NIL	1-2	1-2
2	7516	NIL	NIL	1-2	3-4	NIL	NIL	2-3	1-2
3	7537	NIL	NIL	2-3	4-5	NIL	NIL	1-2	2-3
4	7603	NIL	NIL	1-2	1-2	NIL	NIL	1-2	1-2
5	7621	NIL	NIL	3-4	1-2	NIL	NIL	3-4	1-2
6	7625	NIL	NIL	1-2	2-3	NIL	NIL	2-4	3-4
7	7671	NIL	NIL	2-3	1-2	NIL	NIL	1-2	2-4
8	7817	NIL	NIL	2-3	1-2	NIL	NIL	1-2	1-2
9	7932	NIL	NIL	3-5	3-4	NIL	NIL	2-3	1-2
10	7941	NIL	NIL	2-3	2-4	NIL	NIL	1-2	2-3
11	H15914	NIL	NIL	3-4	1-2	NIL	NIL	1-2	3-4
12	H16062	NIL	NIL	4-5	1-2	NIL	NIL	2-3	1-2
13	H16214	NIL	NIL	1-2	2-3	NIL	NIL	2-3	2-3
14	H16712	NIL	NIL	1-2	1-2	NIL	NIL	3-5	2-3
15	H16756	NIL	NIL	2-3	3-4	NIL	NIL	2-3	3-5
16	H16912	NIL	NIL	1-2	1-2	NIL	NIL	3-4	2-3
17	H17115	NIL	NIL	1-2	2-3	NIL	NIL	4-5	1-2
18	H19071	NIL	NIL	3-4	2-3	NIL	NIL	1-2	2-3
19	H19442	NIL	NIL	2-4	3-5	NIL	NIL	1-2	3-4
20	H19489	NIL	NIL	3-5	2-3	NIL	NIL	2-3	4-5

URINE EXAMINATION BEFORE AND AFTER TREATMENT – OP PATIENTS

S. NO	OP NO	URINE							
		Before Treatment				After Treatment			
		Albumin	Sugar	Deposits		Albumin	Sugar	Deposits	
				Pus Cells	Epi. cells			Pus Cells	Epi. cells
21	H21084	NIL	NIL	2-3	2-3	NIL	NIL	2-4	2-3
22	H21399	NIL	NIL	1-2	2-4	NIL	NIL	1-2	1-3
23	H21836	NIL	NIL	2-4	1-2	NIL	NIL	1-2	1-4
24	H22560	NIL	NIL	1-2	2-3	NIL	NIL	4-5	2-5
25	H23059	NIL	NIL	1-2	1-3	NIL	NIL	3-4	1-3
26	H23060	NIL	NIL	4-5	1-4	NIL	NIL	2-4	1-2
27	H29115	NIL	NIL	3-4	2-5	NIL	NIL	2-4	2-3
28	H29292	NIL	NIL	2-4	1-3	NIL	NIL	2-3	2-3
29	H29300	NIL	NIL	2-4	1-2	NIL	NIL	1-2	1-2
30	H29571	NIL	NIL	2-3	2-3	NIL	NIL	1-2	2-4
31	H29914	NIL	NIL	1-2	2-3	NIL	NIL	1-2	2-3
32	H35873	NIL	NIL	1-2	1-2	NIL	NIL	4-5	1-2
33	H37384	NIL	NIL	2-3	2-4	NIL	NIL	3-4	2-4
34	H41531	NIL	NIL	1-3	1-2	NIL	NIL	2-4	1-2
35	H42222	NIL	NIL	1-4	1-2	NIL	NIL	1-2	1-2
36	H45398	NIL	NIL	2-5	4-5	NIL	NIL	1-2	1-3
37	H46888	NIL	NIL	1-3	3-4	NIL	NIL	2-3	1-4
38	H47892	NIL	NIL	1-2	2-4	NIL	NIL	1-3	2-5
39	H51842	NIL	NIL	2-3	2-4	NIL	NIL	2-3	1-3
40	H52221	NIL	NIL	1-2	2-3	NIL	NIL	1-2	1-2

STATISTICAL ANALYSIS

All collected data were entered into MS Excel software using different columns as variables and rows as patients. SPSS software was used to perform statistical analysis. Basic descriptive statistics include frequency distributions and cross-tabulations were performed. The quantity variables were expressed as Mean ± Standard Deviation and qualitative data as percentage. A probability value of <0.05 was considered to indicate as statistical significance. Paired‘t’ test was performed for determining the significance between before and after treatment.

Paired Sample Statistics (Pain BT and AT)

Variable	**No**	**Mean±Std**	**T value**	**P value**
BT	40	5.3±2.18	13.32	P<0.0001
AT	40	0.75±1.64		

The mean± standard deviation of pain score at before and after treatment were 5.3±2.18 and 0.75±1.6 4 respectively which is statistically significant . (t = 13.12 p <0.001).The % of reduction of pain is 85% from 5.3 to 0.75.

Paired Sample Stastistics (ESR one hr BT and AT))

variable	**no**	**mean±std**	**T value**	**P value**
BT	40	22±15.59	7.37	P<0.0001
AT	40	7.05±6.00		

The mean± standard deviation of ESR at before and after treatment were 22±15.59 and 7.05±6.00respectively which is statistically significant (t= 7.37 p <0.001). The reduction of ESR in one hr is 68% from 22 to 7.05.

Discussion

6. DISCUSSION

- The main aim of the dissertation work is to study the therapeutic effect of the drug poora parpam in reducing the pain, swelling, restriction of movements and other clinical symptoms in the disesae Keel Vaayu.

- The clinical features of Keel Vaayu can be correlated with Osteo Arthritis in modern science. OA is a degenerative joint disease involving the cartilage and many of its surrounding tissues. In addition to damage and loss of articular cartilage, there is remodelling of subarticular bone, osteophyte formation, ligamentous laxity, weakening of periarticular muscles and in some cases, synovial inflammation.

- The drugs which possess anti-vatha property as mentioned in Siddha literature were selected and the trial drugs were prepared by the Author in the Gunapadam practical laboratory of National Institute of Siddha, after getting proper authentication of raw drugs from the Medicinal botany department at NIS, Chennai 47, and Chemistry department in Siddha central Research Institute Arumbakkam Chennai 106, under the supervision of the members of the teaching faculty and guided by the Head of the Department of Maruthuvam of the National Institute of Siddha, Chennai - 47. The trial drug was prepared by the standard operating procedure as mentioned in the protocol.

- He safety Studies of POORA PARPAM has been completed as a Dissertation work at NIS(Referrence:Dissertation -187(D), DR.MGR MEDICAL UNIVERSITY reg no:32093606,April-2012 , Department of nanju noolum maruthuva neethu noolum,National Institute of Siddha, Chennai. reports showed no hepato and renal toxicity.

- The trial drug was proved to be safe for human beings from the observations made from the study.

- The Biochemical qualitative and quantitative analysis were done at the Biochemistry lab of NIS, CCRS and IIT. It revealed the presence of effective minerals and the existence of the drug molecules at micro level.it also shows heavy metals are BDL(ICPOES).

- The clinical study was conducted with a well defined protocol and a proper proforma after the approval of the Institutional Ethical Committee. After screening patients reporting at the OPD of department of Maruthuvam, 40 cases were selected for induction to the trial. Before enrollment into the trial the informed consent was obtained from the patients.

- 40 patients of both genders were recruited for this study. Among the 40 patients 30 were OPD patients and the remaining 10 were IPD patients. For In-Patients, who were not in a situation to stay in the hospital for a long time, were advised to attend the Out-Patient Department of Maruthuvam for further follow- up.

- The treatment was aimed at normalizing the deranged thodams and providing relief from symptoms. By giving purgation we can normalize the deranged Vaatham.

“விரேசனத்தால் வாதந் தாழும்”

- Before treatment the patients were advised to take Agasthiyar kuzhambu- 130 mg with notchi chaaru in early morning for purgation.The patient was advised to take rest without internal medicine on next day.

- The patients were treated with trial drugs poora parpam 6 mg(internal) twice a day with butter or ghee and nathaichoori ennai Ennai 80ml (external) for 8 days. Patients were instructed to take the medicines regularly advised to follow pathiyam (avoid tamarind, tubers, etc) and advised to avoid cold exposure. For Out- Patients the drugs were given for 4 days followed by 4 days of break ,again the medicine was given for 4 days. the clinical assessment was done on 0th day, and 12th day

- For In-Patients the drugs were given for 8 days and the clinical assessment was done daily.
- After the treatment, the patients were advised to visit the Out-Patient ward of Department of Maruthuvam for another 2 months for follow-up. The results observed during the study period were discussed by the author below.

OBSERVATIONS:

- The majority affected sex is female (70%). The common cause for this may be depletion of calcium, nutritional deficiency, obesity and increased house hold works. History taking these reveals the above reasons for female predominance.
- This study shows that the highest incidence of keel vaayu is between 51-60 years of age.
- In this study, 75% of cases were reported from Neithal land. In Siddha literatures, it was mentioned that Neithal, which is responsible for Vaatha diseases. This study also emphasized the same.
- Among 40 patients, 31 (75%) were non-vegetarians and 9 (25%) were vegetarians.
- Munpani kaalam (Dec and Jan) showed the highest incidence of 62.5% and 37.5% were reported during Pinpani kaalam.
- Viyanan, Samanan were affected in all 40 cases.(patients had difficulties to flex and extend the knee)
- In all the cases the Sathaga pitham was affected.
- Santhigam was affected in all the 40 cases. Santhiga kabam mainly lives in joints and so it was affected in all the cases.
- Pulse reading (Naadi) was observed in all patients. 30 cases had Vaathapitham, 8 cases had Pithavaatham, and Vaathakabam, Kabavaatham for each 1 cases.
- Among 40 patients in 32 cases oil spreaded slowly, in 7 cases appeared like ring and in 1 cases it appeared like pearl.
- Enbu was affected in all the 40 cases (100%), Saaram was also affected in all the 40 cases (100%), Kozhuppu was affected in all 40 cases (100 %), and there

were no changes noted in other thathukkal like Moolai, Sukkilam and Suronitham.

- Kaal (leg) was affected in all the 40 cases (100%).(pain,swelling,movement restriction present in knee)

CLINICAL MANIFESTATIONS:

Pain in the knee joint was present in 40 cases. Swelling was Present in 29 cases. The other important features were morning stiffness in 14 cases, tenderness in 22 cases, restricted movements in 40 cases, crepitation were observed in all 40 cases.

PRECIPITATING FACTORS:

Already it was explained that aging is the most common cause for keel vaayu. Apart from that, increased household works, nutritional deficiency, Obesity (35%)and menopause, Hormonal imbalance were the other precipitating factors.

OCCUPATIONAL REFERENCES:

Household work accounts for the highest number of 18 cases. More weight bearing and improper positioning of knee are also the cause which leads to Osteoarthritis.

LABORATORY INVESTIGATIONS:

- By laboratory investigation ESR was found raised in early stages but after treatment it was found reduced.
- Total WBC counts, TRBC and Hb levels showed no changes in this study..
- Total cholesterol was decreased in considerable cases.
- Blood Urea and Serum Creatinine levels showed no changes in this study.
- The radiographic studies showed narrowed joint space and presence of Osteophytes. The trial drug showed improvement in prognosis of the disease clinically rather than in radiographic changes.

TREATMENT:

The treatment was aimed at normalizing the deranged mukkutram and providing relief from symptoms. As the first line of treatment patients were given

purgation with Agasthiyar kulambu - 130mg with notchi charu in the early morning. The patient was advised to take rest without internal medicine on that day.

Then the author treated the patients with trial drugs POORA PARPAM 6 mg bid ghee or butter (Internal) and nathai choori ennai (External). During treatment, the patients were advised to follow Pathiyam (avoid tamarind, tubers.etc.). Drugs were given for 4 days followed by 4 days of break; again the medicine was given for 4 days

EFFECT OF TREATMENT:

Good improvement was observed in 30 Patients, moderate improvement in 6 patients and mild improvement in 4 patients. The mean pain score before treatment was 5.3 and after treatment it is reduced to 0.75.No toxic and side effects were clinically observed in all cases.

EVALUATION OF MEDICINES:

- The preliminary phytochemical study revealed the presence of several phyto-constituents. The test drug answered for the presence of Amino acid, calcium, Tannic Acid and Alkaloids.
- The biochemical markers of liver function test did not show any evidence of liver toxicity.
- The biochemical markers of renal function test did not show any evidence of renal toxicity.
- There were no significant changes in biochemical parameters like blood cholesterol, body weight, food, water intake and behavioral parameters.

Summary

7. SUMMARY

- This study has been approved by IEC of NIS [IEC approved no:NIS/IEC /8-14/5- 26-08-2014.
- The clinical study on keel vaayu with reference to its aetiology, pathogenesis, investigations, clinical features, diagnosis and treatment were conducted at the department of maruthuvam, Ayothidoss Pandithar Hospital, National Institute of Siddha, Chennai – 47.
- The required raw drugs for the preparation of POORA PARPAM (internal) and NATHAICHOORI ENNAI(external) were purchased from a well reputed country shop and the raw drugs will be authenticated in concern department (Department Medicinal botany, NIS and SCRI and purified. The medicine was prepared in Gunapadam laboratory of National institute of Siddha.
- Drugs were prepared by the Author in the Gunapadam practical laboratory of National Institute of Siddha
- 40 cases of both the sexes (majority of females) with the signs and symptoms of keel vaayu were selected in the age group within 30 to 60 for the study. 10 In-Patients were given the trial drugs each for 8 days. 30 cases were treated in the Out- Patient Department each for 8 days with the trial drugs.
- All the details about the study and the drugs were informed to the patients in their vernacular language, dietary regimen and information sheet were given to them and signed consent forms were obtained from them. Before starting the treatment, the blood samples of the selected patients were subjected to clinical laboratory and radiological investigation.
- On the first day of the treatment, purgation was given by administering Agasthiyar kulambu – 130mg with notchi chaaru in the early morning to normalize the deranged vadham humour.
- Second day the patient were put under rest.
- From the third day onwards, the patients were treated with the trial drugs poora parpam 6 mg bid with ghee or butter was given internally and nathaichhori ennai.Every 4^{th} day; the patients were assessed for clinical improvement and adverse effects.

- Before treatment (0th day) and at the end of the treatment (12th day) the laboratory investigations were done. The x-ray of the affected Joints was taken. The improvement was assessed.
- During the course of treatment there were no adverse effects or unwanted drug reactions in Gastro intestinal tract, Respiratory system, Cardio vascular system and excretory systems.
- The safety Studies of POORA PARPAM has been completed as a Dissertation work at NIS(Referrence:Dissertation -187(D), DR.MGR MEDICAL UNIVERSITY reg no:32093606,April-2012 , Department of nanju noolum maruthuva neethu noolum,National Institute of Siddha, Chennai. reports showed no hepato and renal toxicity.
- The study results showed that 75 % had Good improvement, 15% had Moderate improvement and 10% had mild improvement. The pain assessment was done in all the 40 patients participated in the trial using the universal pain assessment scale and at the end of the study the results showed, the mean pain score before treatment was 5.3 and after treatment it is reduced to 0.75. The restriction of movements after treatment was reduced in 30 cases and persists in 10 cases.

Conclusion

8.CONCLUSION

- The study results showed that 75 % had Good improvement, 15 % had Moderate improvement and 10 % had mild improvement.
- The safety Studies of POORA PARPAM has been completed as a Dissertation work at NIS(Referrence:Dissertation -187(D), DR.MGR MEDICAL UNIVERSITY reg no:32093606,April-2012 , Department of nanju noolum maruthuva neethu noolum,National Institute of Siddha, chennai-47. The trial drug was proved safe.
- Clinically, no adverse effects were reported during the trial and the laboratory investigations were also within normal limits. So, the drug is assumed to be safe for humans
- Hence the study concludes that, the trial drugs are clinically effective in reduction of pain, swelling, restriction of movements.
- Because of the encouraging clinical results, it could be concluded that "POORA PARPAM**"** (Internally)" and "NATHAICHOORI ENNAI (Externally)" are effective in the treatment of "**keel** vaayu" (Osteoarthritis).
- However further work with large number of patients should be carried out towards finding the ideal dose response.

Annexures

Proforma

NATIONAL INSTITUTE OF SIDDHA
AYOTHIDOSS PANDITHAR HOSPITAL, CHENNAI – 600 047.

POST-GRADUATE DEPARTMENT OF MARUTHUVAM

CLINICAL EVALUATION OF SIDDHA DRUG, POORA PARPAM (Internal) NATHAICHOORI ENNAI (External)IN THE TREATMENT OF KEELVAYU(OSTEOARTHRITIS)

Principal Investigator: **Reg. No:**

FORM I - SCREENING & SELECTION PROFORMA

1. SERIAL NO : **2. OP /IP NO: ----------**

3. NAME: …… 4. AGE/GENDER: …….....

5. OCCUPATION: …… 6. INCOME: ……

INCLUSION CRITERIA

- Whether age is between 30-60 YES\ NO
- Sex-Both M \ F
- Pain @ swelling of both knee joints. YES\ NO
- crepitations YES\ NO
- stiffness @ restricted movements YES\ NO
- willing to attend OPD or admission in IPD for the trial YES\ NO
- Willingness for consent YES\ NO
- Willing to give specimen of blood for the investigation YES\ NO
- willing to undergo radiological investigation YES\ NO

EXCLUSION CRITERIA

- Hypertension YES\ NO
- Diabetes mellitus YES\ NO
- Cardiac disease YES\ NO
- Rheumatoid arthritis YES\ NO
- Tuberculosis YES\ NO
- Patient with any other serious systemic illness YES\ NO
- Chronic kidney disease YES\ NO
- Gouty arthritis YES\ NO

ADMITTED TO TRAIL

YES ☐ NO ☐

If Yes, OPD ☐ IPD ☐

Date:

Station:

Signature of the Investigator:

Signature of the Lecturer: **Signature of the HOD**

NATIONAL INSTITUTE OF SIDDHA
AYOTHIDOSS PANDITHAR HOSPITAL, CHENNAI – 600 047.

POST-GRADUATE DEPARTMENT OF MARUTHUVAM

CLINICAL EVALUATION OF SIDDHA DRUG, POORA PARPAM (Internal) NATHAICHOORI ENNAI(External)IN THE TREATMENT OF KEELVAYU(OSTEOARTHRITIS)

Principal Investigator: **Reg. No:**

FORM II –A

STUDY NO: **OP / IP NO:**
NAME: **AGE / GENDER:**
ADDRESS: **CONTACT NO :**
RELIGION : H / C / M / O.
OCCUPATION: **INCOME:**
MARITAL STATUS : 1. Married 2. Unmarried
DATE OF INTIAL ASSESSMENT:
COMPLAINTS & DURATION:

PERSONAL HISTORY:

PERSONAL HABITS	YES	NO	IF YES SPECIFY DURATION	AMOUNT/Qty
Smoking				
Tobacco Chewing				
Alcohol				
Narcotic Drug Addiction				

HISTORY OF PREVIOUS ILLNESS AND TREATMENT TAKEN:

FAMILY HISTORY:
Whether this problem runs in family? 1. Yes 2. No
If yes, mention the relationship of affected person(s) 1._____

2._____

DIETARY STYLE: 1. Vegetarian 2. Non-vegetarian
MENSTURAL AND OBSTETRIC

HISTORY:

Date:
Station:
Signature of the Investigator:
Signature of the Lecturer: **Signature of the HOD**

FORM –II B

GENERAL EXAMINATION:

1. Body weight [Kg]	:		
2. Height [cms]	:		
3. Body Temperature [F]	:		
4. Blood Pressure (mm/Hg)	:		
5. Pulse Rate /min.	:		
6. Heart Rate / min.	:		
7. Respiratory Rate /min.	:		
		Yes	**No**
8. Pallor	:	☐	☐
9. Jaundice	:	☐	☐
10. Clubbing	:	☐	☐
11. Cyanosis	:	☐	☐
12. Pedal Oedema	:	☐	☐
13. Lymphadenopathy	:	☐	☐
14. Jugular venous pulsation	:	☐	☐

SYSTEMIC EXAMINATION

Cardiovascular system :
Respiratory system :
Gastro-intestinal system :
Central Nervous system :
Urogenital system :
Endocrine system :

SIDDHA SYSTEM OF EXAMINATION

1. THEGI (BODY CONSTITUTION):

1. Vatha udal	☐
2. Pitha udal	☐
3. Kaba udal	☐
4. Thontha udal	☐

2. NILAM (LAND WHERE THE PATIENT LIVED MOST):

1. Kurinji (Hilly terrain) ☐
2. Mullai (Forest range) ☐
3. Marutham (Plains) ☐
4. Neithal (Coastal belt) ☐
5. Paalai (Aridregion) ☐

3. KAALAM:

1. Kaar kaalam (Aavani-Purattasi) ☐
2. Koothir kaalam (Ippasi-Kaarthigai) ☐
3. Munpani kaalam (Maargazhi-Thai) ☐
4. Pinpani kaalam (Maasi-Panguni) ☐
5. Ilavenil kaalam (Chithirai-Vaigasi) ☐
6. Muthuvenil kaalam (Aani-Aadi) ☐

4. GUNAM:

1. Sathuvam ☐
2. Rasatham ☐
3. Thamasam ☐

5. PORIPULANGAL (SENSORY ORGANS):

	Before treatment	**After treatment**
Mei (Skin)	Normal / Affected	Normal / Affected
Vai (Tongue)	Normal / Affected	Normal / Affected
Kann (Eye)	Normal / Affected	Normal / Affected
Mooku (Nose)	Normal / Affected	Normal / Affected
Sevi (Ear)	Normal / Affected	Normal / Affected

6.KANMENDRIYAM (MOTOR ORGANS) :

	Before treatment	**After treatment**
Kai	Normal /Affected	Normal /Affected
Kaal	Normal /Affected	Normal /Affected
Vai	Normal /Affected	Normal /Affected
Eruvai	Normal /Affected	Normal /Affected
Karuvai	Normal /Affected	Normal /Affected

7. KOSANGAL (SHEATH):

	Before treatment	After treatment
Annamaya kosam	Normal /Affected	Normal /Affected
Pranamaya kosam	Normal /Affected	Normal /Affected
Manomaya kosam	Normal /Affected	Normal /Affected
Vignanamaya kosam	Normal /Affected	Normal /Affected
Ananthamaya kosam	Normal /Affected	Normal /Affected

8. SEVEN UDAL THAATHUKKAL (SEVEN SOMATIC COMPONENTS)

	Before treatment	After treatment
Saaram	Normal /Affected	Normal /Affected
Senneer	Normal /Affected	Normal /Affected
Oon	Normal /Affected	Normal /Affected
Kozhuppu	Normal /Affected	Normal /Affected
Enbu	Normal /Affected	Normal /Affected
Moolai	Normal /Affected	Normal /Affected
Sukkilam / Suronitham	Normal /Affected	Normal /Affected

A) VALI:

	0^{th} day	**12^{th}day**
Praanan		
Abaanan		
Samaanan		
Udhaanan		
Viyaanan		
Naagan		
Koorman		
Kirukaran		
Devathathan		
Dhananjeyan		

B) AZHAL

	0th day	**12th day**
Analakam		
Ranjakam		
Saathakam		
Prasakam		
Aalosakam		

C) IYYAM

	0th day	**12thday**
Avalambagam		
Kilethagam		
Pothagam		
Tharpagam		
Santhigam		

10. ENVAGAI THERVU: [EIGHT TYPES OF EXAMINATION]

I. NAADI: [PULSE PERCEPTION]

NAADI	0th day	
	12thday	

II. SPARISAM: [PALPATION]

Day	SPARISAM
0th day	
12th day	

III. NAA: [TONGUE]

NAA	0thday	12 thday

IV. NIRAM: [COMPLEXION]

1. Vadham ☐
2. Pitham ☐
3. Kabam ☐

V. MOZHI: [VOICE]

1. High Pitched ☐
2. Low Pitched ☐
3. Medium Pitched ☐

VI.VIZHI: [EYES]

VIZHI	0th day	12th day

VII. MALAM: [BOWEL HABITS / STOOLS]

	Before treatment	After treatment
Niram		
Irugal		
Ilagal		
Others		

VIII. MOOTHIRAM [URINE EXAMINATION]
NEERKKURI:

Neerkkuri	Before treatment	After treatment
Niram		
Manam		
Edai		
Nurai		
Enjal		

NEIKKURI:

Neikkuri	Before treatment	After treatment
Aravana needathu/ Snake like pattern		
Azhipol paraviyathu Annular/Ringedpattern		
Muththothu ninrathu Pearlbeadepattern		
Other patterns		

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Principal Investigator: **Reg. No:**

FORM : CLINICAL ASSESSMENT DURING & AFTER TRIAL

1. OP/ IP NO: …… 2. SL. NO: …… 3.NAME: …….
4. AGE: …… 5. GENDER: ….. 6. DATE OF RECRUITMENT: ……
12. CLINICAL EXAMINATION:

13**. LOCOMOTOR SYSTEM:**

CLINICAL SYMPTOMS:

Affected knee joints:	Right	☐	Left	☐	Both	☐
Pain in knee joint:	Mild	☐	Moderate	☐	Severe	☐
Onset:	Sudden	☐	Gradual	☐		

14. CLINICAL EXAMINATION OF KNEE JOINT

I.INSPECTION:

	0^{th} day	12^{th}day
Attitude		
swelling		
Skin over the knee joints		
Muscle wasting		
Deformity		

II.PALPATION:

	0^{th} day	12 day
Tenderness		
Crepitation		
Local heat		

III. MOVEMENTS

	0^{th} day	12^{th} day
Flexion		
Extension		

IV. JOINT MESUREMENT:

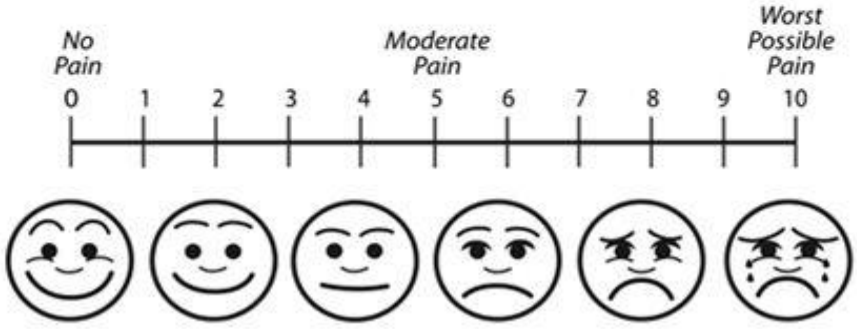
A.

	0^{th} day	12 thday
PAIN		
B. Early morning Stiffness (Present/absent)		
C. Nature of pain		
D. Aggravating factor- Movement (Yes/No)		
E. Relieving factor – Rest(Yes/No)		
G. Tenderness (Present/absent)		
RESTRICTION OF MOVEMENT (Fully/Partial/No) Knee joints		

B. UNIVERSAL PAIN ASSESMENT SCALE:

Pain Intensity Scale: 0 to 10

(from Simkin, P. (2010), Pain Medications for Labor & Birth (PowerPoint). Waco, Childbirth Graphics



0	:	No Pain	
1 -3	:	Mild pain	
4-6	:	Moderate pain	
7-9	:	Severe pain	
10	:	worst possible pain	

C. RESTRICTED MOVEMENT ASSESSMENT SCALE:

Gradation of movements:

- Grade 1 - Fit for all activities, do their work without support.
- Grade II - Mild pain present in knee joint, mild restricted movements.
- Grade III - Pain present in knee joint, moderate restriction of movements.
- Grade IV - Severe pain, bed ridden.

(Ref: Clinical manual for nursing practice (National Institute of Health Warren Grant Magnuson Clinical Centre)

Date:

Station:

Signature of the Investigator:

Signature of the Lecturer: **Signature of the HOD**

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POST-GRADUATE DEPARTMENT OF MARUTHUVAM

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Principal Investigator: **Reg. No:**

.FORM-III - LABORATORY INVESTIGATIONS

BLOOD INVESTIGATIONS		NORMAL VALUES	BEFORE TREATMENT	AFTER TREATMENT
Hb(gm/dl)		M:13-18 W:11-16		
T.RBC(millions cells /Cu.mm)		M:4.5-6.5 W:3.5-5.5		
ESR (mm)	½ hr.	-		
	1 hr.	M:0-10 W:0-20		
T.WBC (Cells /Cu.mm)		4000-11000		
Differential Count (%)	Polymorphs	40-75		
	Lymphocytes	20-35		
	Monocytes	2-10		
	Eosinophils	1-6		
	Basophils	0-1		

BLOOD INVESTIGATIONS		NORMAL VALUES	BEFORE TREATMENT	AFTER TREATMENT
Blood glucose (mg/dl)	Fasting	70-110		
	PP	80-140		
Lipid profile (mg/dl)	Serum cholesterol	150-200		
	HDL	30-60		
	LDL	Up to 130		
	VLDL	40		
	TGL	Up to 160		
RFT (mg/dl)	Blood urea	16-50		
	Serum creatinine	0.6-1.2		
LFT (mg/dl)	Total bilirubin	0.2-1.2		
	Direct bilirubin	0.1-0.2		
	Indirect bilirubin	0.2-0.7		
	Total protein	6-8		
	Serum Albumin	3.5-5.5		
	Serum globulin	2-3.5		
	SGOT (IU/L)	0-40		
	SGPT (IU/L)	0-35		
	Alkaline phosphatase	80-290		
	Serum calcium	9-11		
	Serum phosphorus	2-5		
	Serum Uric acid	M:3-9 W: 2.5-7.5		
CRP				
ASO titre				
RA factor				

B.URINE INVESTIGATIONS:

URINE INVESTIGATIONS	BEFORE TREATMENT	AFTER TREATMENT
Albumin		
Sugar (Fasting) **(PP)**		
Deposits		
Bile salts		
Bile pigments		

C.RADIOLOGICAL EXAMINATIONS

X- Ray: Knee joint:

1. **Antero posterior**
2. **Lateral view**

Date:
Station:
Signature of the Investigator:
Signature of the Lecturer: **Signature of the HOD**

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Name of Principal Investigator: **Reg. No :**

FORM - IV(DRUG COMPLIANCE FORM)

SERIAL NO:

NAME:

DRUG NAME

On 1st day-Date: Drugs issued: Drugs returned:

On 9th day-Date: Drugs issued: Drugs returned:

Day	Date	Morning	Evening
Day 1			
Day2			
Day3			
Day4			
Day9			
Day10			
Day11			
Day12			

Station:

Signature of the Investigator:

Signature of the Lecturer: **Signature of the HOD**

FORM – PATIENT INFORMATION SHEET

Name of Principal Investigator: **Reg. No :**

Name of the institute: National Institute of Siddha,
Tambaram Sanatorium,
Chennai-47.

INFORMATION SHEET FOR PATIENTS PARTICIPATING IN THE OPEN CLINICAL TRIAL.

I,……Studying M.D (Siddha) at National Institute of Siddha, Tambaram Sanatorium is doing a trial on KEEL VAYU (OSTEOARTHRITIS). Osteo arthritis is a most common degenarative disease, occurring throughout the world. In this regard, I am in a need to ask you few questions. I will maintain confidentiality of your comments and data obtained. There will be no risk of disclosing your identity and no physical, psychological or professional risk is involved by taking part in this study. Taking part in this study is voluntary. No compensation will be paid to you for taking part in this study.

You can choose not to take part. You can choose not to answer a specific question. There is no specific benefit for you if you take part in the study. However, taking part in the study may be of benefit to the community, as it may help us to understand the problem of defaulters and potential solutions.

If you agree to be a participant in this study, you will be included in the study primarily by signing the consent form and then you will be given the internal medicine POORA PARPAM (Internal medicine- 6mg BD with ghee or butter for 8 days) and NATHAICHOORI ENNAI 80ml(External medicine), if you wish to stay in the InPatient ward Treatment will be provided to you assuring that you will not be definitely hurt in any course of treatment.

The information I am collecting in this study will remain confidential.

If you wish to find out more about this study before taking part, you can ask me all the questions you want or contact Dr.G.KARPAGAM PG Scholar principal investigator of this study, attached to National Institute of Siddha, Chennai-47. You can also contact the Member-secretary of Ethics committee, National Institute Siddha, Chennai 600047, Tel No: 9940050581, for rights and participation in the study.

தகவல் படிவம்

"கீல் வாயு நோய்க்கான சித்த மருந்துகளின் பூர பற்பம் (உள் மருந்து) மற்றும் நத்தைசூரி எண்ணெய் (வெளி மருந்து) பரிகரிப்புத் திறனைக் கண்டறியும் மருத்துவ ஆய்விற்கான தகவல் படிவம்.

முதன்மை ஆராய்ச்சியாளர் பெயர் : மரு.கோ.கற்பகம்
நிறுவனத்தின் பெயர் : தேசிய சித்த மருத்துவ நிறுவனம்
தாம்பரம் சானட்டோரியம்
சென்னை- 47

தேசிய சித்த மருத்துவ நிறுவனத்தில் பட்ட மேற்படிப்பு பயின்று வரும் நான் (மருத்துவர்..கோ.கற்பகம்.) "கீல்வாயு என்னும் மூட்டுகளை பாதிக்கும் நோய்க்கான மருத்துவ ஆராய்ச்சியில் ஈடுபட்டுள்ளேன்.
கீல்வாயு என்னும் நோயானது எலும்பு தேய்மானத்தாலும் எலும்புகளுக்கு இடையே இடைவெளி குறைவதாலும் முழங்கால் மூட்டுகளில் உள்ள நெய்ப்புத்தன்மை குறைவதாலும் உண்டாகிறது. இது முழங்கால் மூட்டுகளில் வலி, வீக்கம், மூட்டுகளை நீட்ட மடக்க சிரமம்,நடப்பதில் சிரமம்,காலை நேரங்களில் விறைப்புத்தன்மை முதலிய குறிகுணங்களைக் கொண்ட நோய்
இது பரவக் கூடிய நோய் "அல்ல.
இந்த ஆராய்ச்சி சம்பந்தமாக சில கேள்விகளைக் கேட்கவும், தேவையான ஆய்வக பரிசோதனைக்கு தங்களை உட்படுத்தவும் உள்ளேன்.

இந்த ஆராய்ச்சிக்கு தாங்கள் விருப்பத்தின் பேரில் உட்படும் பட்சத்தில் உள்மருந்தாக பூர பற்பம் (6mg) 2 வேளை (காலை மாலை) உணவுக்குப் பின் 8 நாட்களுக்கு உட்கொள்ள வேண்டும். வெளி மருந்தாக நத்தைசூரி எண்ணெய் 10 மிலி 8 நாட்களுக்கு நோயுள்ள இடங்களில் வெளியே தடவ வேண்டும். வெளி நோயாளர் 4 நாட்களுக்கு ஒருமுறை மருத்துவமனைக்கு வரவேண்டும்.
இது சம்பந்தமான தங்களது "அனைத்து விவரங்களும் ரகசியமாக வைக்கப்படும் என உறுதி அளிக்கிறேன். இதில் பயணப்படி முதலிய எந்த உதவி தொகையும் வழங்கப்பட மாட்டாது. இந்த ராய்ச்சியின் போது உடலுக்கு வேறு பாதிப்பு ஏற்படும் பட்சத்தில் தேசிய சித்த மருத்துவமனையில் தக்க மாற்று சிகிச்சை ஆளிக்கப்படும். இந்த ஆராய்ச்சியில் தங்களை உட்படுத்திய பிறகு உங்களுக்கு விருப்பமில்லையெனில் எப்போது வேண்டுமானாலும் விலகி கொள்ள முழு உரிமை உள்ளது.

இந்த ஆராய்ச்சி சம்பந்தமாக மற்ற விபரங்களுக்கும் நோயின் தன்மை பற்றியும் முதன்மை ஆராய்ச்சியாளரான மரு.கோ.கற்பகம் (பட்ட மேற் படிப்பாளர் சிறப்பு மருத்துவ பிரிவு) "அணுகவும். கைப்பேசி எண் 9940050581 மேலும் இந்த ஆராய்ச்சிக்கு IEC சான்று பெறப்பட்டுள்ளது.

NATIONAL INSTITUTE OF SIDDHA
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Name of Principal Investigator: **Reg. No :**

CONSENT FORM - FORM

"I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions I have asked have been answered to my satisfaction.

I consent voluntarily to participate as a participant in this study and understand that I have the right to withdraw from the study at any time without in any way it affecting my further medical care".

"I have received a copy of the information sheet/consent form".

Date:
Signature of the participant
In case of illiterate participant

"I have witnessed the accurate reading of the consent form to the potential participant, and the individual has had the opportunity to ask questions. I confirm individual has given consent freely."

Date:

Signature of a witness
(Selected by the participant bearing no connection with the survey team)

Left thumb Impression of the Participant

FORM ஒப்புதல் படிவம்

ஆய்வாளரால் சான்றளிக்கப்பட்டது

நான் கீல் வாயு என்னும் நோயின் ஆய்வைக் குறித்த அனைத்து விபரங்களையும் நோயாளிக்குப் புரியும் வகையில் எடுத்துரைத்தேன் என உறுதியளிக்கிறேன்.

தேதி: **கையொப்பம்:**

இடம்: **பெயர்:**

நோயாளியின் ஒப்புதல்

என்னிடம் இந்த மருத்துவ ஆய்வின் காரணத்தையும், மருந்தின் தன்மை மற்றும் மருத்துவ வழிமுறை பற்றியும், தொடர்ந்து எனது உடல் இயக்கத்தைக் கண்காணிக்கவும், அதனைப் பாதுகாக்கவும் பயன்படும் மருத்துவ ஆய்வுக்கூட பரிசோதனைகள் பற்றி திருப்தி அளிக்கும் வகையில் ஆய்வு மருத்துவரால் விளக்கிக் கூறப்பட்டது.

நான் இந்த மருத்துவ ஆய்வின் போது, காரணம் எதுவும் கூறாமல், எப்பொழுது வேண்டுமானாலும் இந்த ஆய்விலிருந்து என்னை விடுவித்து கொள்ளும் உரிமையைத் தெரிந்திருக்கின்றேன்.

நான் என்னுடைய சுதந்திரமாகத் தேர்வு செய்யும் உரிமையைக் கொண்டு கீல் வாயு என்னும் நோய்க்கு பூர பற்பம் (உள் மருந்து) மற்றும் நத்தைசூரி எண்ணெய் (வெளி மருந்து) மருந்தின் பரிகரிப்புத் திறனைக் கண்டறியும் மருத்துவ ஆய்விற்கு என்னை உட்படுத்த ஒப்புதல் அளிக்கிறேன்.

தேதி: **கையொப்பம்:**
இடம்: **பெயர்:**
சாட்சிக்காரர் பெயர்:
கையொப்பம்:
உறவுமுறை:

NATIONAL INSTITUTE OF SIDDHA
AYOTHIDOSS PANDITHAR HOSPITAL, CHENNAI – 600 047.

POST-GRADUATE DEPARTMENT OF MARUTHUVAM

CLINICAL EVALUATION OF SIDDHA DRUG,POORA PARPAM (Internal) NATHAICHOORI ENNAI(External)IN THE TREATMENT OF KEELVAYU(OSTEOARTHRITIS)

Name of Principal Investigator: **Reg. No :**

FORM - WITHDRAWAL FORM

1. SERIAL NO OF THE CASE: ……
2. OP / IP NO: .....
3. NAME: ……
4.AGE: ……
5.GENDER:.....
6. DATE OF TRIAL COMMENCEMENT: ……...
7. DATE OF WITHDRAWAL FROM TRIAL: ……..
8. REASONS FOR WITHDRAWAL:

Long absence at reporting:	Yes/ No
Irregular treatment:	Yes/ No
Shift of locality:	Yes/No
Increase in severity of symptoms:	Yes/No
Development of severe adverse drug reactions:	Yes/No
Development of adverse event :	Yes/No

Date:
Station:
Signature of the Investigator:
Signature of the Lecturer: **Signature of the HOD**

NATIONAL INSTITUTE OF SIDDHA
AYOTHIDOSS PANDITHAR HOSPITAL, CHENNAI – 600 047.

POST-GRADUATE DEPARTMENT OF MARUTHUVAM

An open clinical trial to Evaluate the Therapeutic Efficacy of Siddha Herbo-mineral formulation **POORA PARPAM** (Internal) and **NATHAICHOORI ENNAI** (External) in the management of **KEEL VAYU** (OSTEOARTHRITIS).

Name of Principal Investigator: **Reg. No :**

FORM –ADVERSE REACTION FORM

SERIAL NO:
OP/IP NO:
NAME: **AGE:** **GENDER:**
DATE OF TRIAL COMMENCEMENT:
DATE OF THE ADVERSE REACTION OCCUR:
DESCRIPTION OF ADVERSE REACTION:

Date:
Station:
Signature of the Investigator:
Signature of the Lecturer: **Signature of the HOD**

NATIONAL PHARMACOVIGILANCE PROGRAMME FOR SIDDHA DRUGS

Reporting Form for Suspected Adverse Reactions to Siddha Drugs

Please note: i. All consumers / patients and reporters information will remain confidential.

ii. It is requested to report all suspected reactions to the concerned, even if

it does not have complete data, as soon as possible.

Peripheral Center code: State:

1. Patient / consumer identification (please complete or tick boxes below as appropriate)

<table>
<tr><td>Name</td><td>Father name</td><td rowspan="2">Patient / Record No.</td></tr>
<tr><td>Ethnicity</td><td>Occupation</td></tr>
<tr><td colspan="2" rowspan="2">Address
Village / Town
Post / Via
District / State</td><td>Date of Birth / Age:</td></tr>
<tr><td>Sex: Male / Female
Weight :
Degam:</td></tr>
</table>

2. Description of the suspected Adverse Reactions (please complete boxes below)

Date and time of initial observation		Season:
Description of reaction		Geographical area:

3. List of all medicines / Formulations including drugs of other systems used by the patient during the reporting period:

Medicine	**Daily dose**	**Route of administration & Vehicle – Adjuvant**	**Date**		**Diagnosis for which medicine taken**
			Starting	**Stopped**	
Siddha					
Any other system of medicines					

4. Brief details of the Siddha Medicine which seems to be toxic :

Details	Drug – 1	Drug – 2	Drug - 3
a) Name of the medicine			
b) Manufacturing unit and batch No. and date			
c) Expiry date			
d) Purchased and obtained from			
e) Composition of the formulation / Part of the drug used			

b) Dietary Restrictions if any

c) Whether the drug is consumed under Institutionally qualified medical supervision or used as self medication.

d) Any other relevant information.

5. Treatment provided for adverse reaction:

6. The result of the adverse reaction / side effect / untoward effects (please complete the boxes below)

Recovered:	Not recovered:	Unknown:	Fatal:	If Fatal Date of death:
Severe: Yes / No.	Reaction abated after drug stopped or dose reduced:			
	Reaction reappeared after re introduction:			
Was the patient admitted to hospital? If yes, give name and address of hospital				

7. Any laboratory investigations done to evaluate other possibilities? If Yes specify:

8. Whether the patient is suffering with any chronic disorders?

Hepatic Renal Cardiac Diabetes Malnutrition

Any Others

9. H/O previous allergies / Drug reactions:

10. Other illness (please describe):

11. Identification of the reporter:

Type (please tick): Nurse / Doctor / Pharmacist / Health worker / Patient / Attendant / Manufacturer / Distributor / Supplier / Any others (please specify)
Name:
Address:
Telephone / E – mail if any :

Signature of the reporter: **Date:**

Please send the completed form to:

Name & address of the RRC-ASU / PPC-ASU

The Director

National Institute of Siddha,

(Pharmacovigilance Regional Centre For Siddha

Tambaram Sanatorium, Chennai-600 047.

☏ (O) 044-22381314 Fax : 044 – 22381314

Website : www.nischennai.org

Email: nischennaisiddha@yahoo.co.in

* ** * * * *

This filled-in ADR report may be sent within one month of observation /occurrence of ADR

Who Can Report?

⇒ Any Health care professionals like Siddha Doctors / Nurses / Siddha Pharmacists / Patients etc.

What to Report?

⇒ All reactions, Drug interactions,

Confidentiality

⇒ The patient's identity will be held in strict confidence and protected to the fullest extent

Signature of the Investigator:

Signature of the Lecturer:

Date :

Station:

Signature of the Investigator:

Signature of the Lecturer:

Signature of the HOD

NATIONAL INSTITUTE OF SIDDHA
AYOTHIDOSS PANDITHAR HOSPITAL, CHENNAI – 600 047.

POST-GRADUATE DEPARTMENT OF MARUTHUVAM

CLINICAL EVALUATION OF SIDDHA DRUG,POORA PARPAM (Internal) NATHAICHOORI ENNAI(External)IN THE TREATMENT OF KEELVAYU(OSTEOARTHRITIS)

Name of Principal Investigator: **Reg. No :**

FORM -VII DIETARY ADVICE FORM

சேர்க்க கூடிய உணவுகள்	தவிர்க்க வேண்டியவைகள்
காய்கள் (Vegetables): கத்தரிப்பிஞ்சு (Unripe brinjal) முருங்கைப்பிஞ்சு (Unripe drumstick) அவரைப்பிஞ்சு (Unripe Dolichos bean) **கீரைகள்(Greens):** பொன்னாங்கண்ணி (Sessile plant [*Alternanthera sessilis*]) மூக்கிரட்டை (Hog weed [*Boerhaavia diffusa*]) தூதுவேளை (Climbing brinjal [*Solanum trilobatum*]) முருங்கைக்கீரை (Leaves of Drumstick [*Moringa oleifera*]) கறிவேப்பிலை (Curry leaf [*Murraya koenigii*]) முடக்கறுத்தான் (Winter cherry [*Cardiospermum halicacabum*]) அறுகீரை (*Amaranthus tristis*) கரிசாலை (trailing eclipta [Eclipta prostrate]) **பழங்கள்(Fruits):** மாதுளை (Pomegranate) ஆப்பிள் (Apple) பப்பாளி (Papaya) ஆரஞ்சு (Orange) பேரீச்சை (Dates) அத்தி (Fig) நாவல் (Jambul [*Syzygium cumini*]) **அசைவம் (Non-vegetarian diet):** வெள்ளாட்டுக்கறி (Meat) காடை (Quail) , சிறு இறால்மீன் (Prawn)	சுரை (Bottle gourd) பூசணி (Pumpkin) வெள்ளரிக்காய் (Cucumber) புடலை (Snake gourd) பீர்க்கு (Ridged gourd) உளுந்து (Black gram) மொச்சை (Indian butter Bean) காராமணி (Cow gram) கொள்ளு (Horse gram) கடுகு (Mustard) எண்ணெய் (Gingelly oil) புளிப்பு (Sour) உப்பு (Salt) வாயுப் பொருட்கள் (Vatha diet) உருளைக் கிழங்கு (Potato) வாழைக் காய் (Plantain) புகையிலை (Tobacco) மது அருந்துதல் (Alcohol) பெண்போகம் (இச்சா பத்தியம்) [Sexual intercourse]

மருத்துவ அறிவுரை:

ஈரமில்லாத் தரையிலும், படுக்கையிலும் படுத்தல் வேண்டும்,
குளிர் காற்று படும்படியான இடத்தில் இருப்பதைத் தவிர்க்கவும்.
உடல் அதிக எடை இருப்பின் எடையைக் குறைக்க வேண்டும்.
அதிக தூரம் நடத்தல், அதிக நேரம் நிற்றல் தவிர்க்கவும்

Photos

UNPURIFIED POORAM

POORA PARPAM

MUTRINA NATHAI CHOORI VEER

VASAMBU

GARLIC

ONION

Op no: H15914 Age/Sex: 59/M

Op no: H29115 Age/Sex: 57/F

Biochemical Analysis

BIOCHEMICAL ANALYSIS OF POORA PARPAM

S.No	EXPERIMENT	OBSERVATION	INFERENCE
	1.Test For Acid Radicals		
1.	**Test For Sulphate :** 2ml of the above prepared extract is taken in a test tube to this added 2ml of 4% ammonium oxalate solution.	No cloudy appearance present	Absence of Sulphate
2.	**Test For Chloride:** 2ml of the above prepared extract is added with 2ml of dil- HNO_3 till the effervescence ceases. Then 2 ml of silver nitrate solution is added.	Cloudy appearance present	Absence of Chloride
s	**Test For Phosphate:** 2ml of the extract is treated with 2ml of ammonium molybdate solution and 2ml of con.HNO_3	No colour appearance	Absence of Phosphate
4.	**Test For Carbonate:** 2ml of the extract is treated with 2ml magnesium sulphate solution	Cloudy appearance present	Absence of Carbonate
5.	**Test For Fluoride & Oxalate:** 2ml of extract is added with 2ml of dil. Acetic acid and 2ml calcium chloride solution and heated.	No cloudy appearance present.	Absence of fluoride and oxalate
6.	**Test For Nitrate:** 1gm of the substance is heated with copper turning and concentrated H2So4 and viewed the test tube vertically down	No Brown gas is evolved	Absence of Nitrate

7.	**Test For Sulphide:** 1gm of the substance is treated with 2ml of con. HCL	No Rotten Egg Smelling gas evolved	Absence of Sulphide
8.	**Test For Nitrite:** 3 drops of the extract is placed on a filter paper, on that - 2 drops of acetic acid and 2 drops of Benzidine solution is placed.	No Characteristic changes	Absence of Nitrite
9.	**Test For Borate:** 2 Pinches of the substance is made into paste by using sulphuric acid and alcohol (95%) and introduced into the blue flame.	Bluish green colour flame not appeared	Absence of Borate
	II. Test For Basic Radicals		
1.	**Test For Lead:** 2ml of the extract is added with 2ml of potassium iodine solution.	No yellow precipitate is obtained.	Absence of Lead
2.	**Test For Copper:** 2ml of extract is added with excess of ammonia solution.	No blue color precipitate formed.	Absence of Copper
3.	**Test For Aluminium:** To the 2ml of extract sodium hydroxide is added in drops to excess.	No characteristic changes.	Absence of Aluminium
4.	**Test For Iron:** a. To the 2ml of extract add 2ml of ammonium thiocyanate solution b. To the 2ml of extract 2ml ammonium thiocyanate solution and 2ml of con HNO_3 is added	Mild red colour appear Blood red colour appeared.	Absence of Iron Absence of iron

5.	**Test For Zinc:** To 2ml of the extract sodium hydroxide solution is added in drops to excess	White precipitate is not formed	Absence of Zinc
6.	**Test For Calcium:** 2ml of the extract is added with 2ml of 4% ammonium oxalate solution	Cloudy appearance and white precipitate is not obtained	Presence of Calcium
7.	**Test For Magnesium:** To 2ml of extract sodium hydroxide solution is added in drops to excess.	White precipitate is not obtained	Absence of Magnesium
8.	**Test For Ammonium:** To 2ml of extract few ml of Nessler's reagent and excess of sodium hydroxide solution are added.	No Brown colour appeared	Absence of Ammonium
9.	**Test For Potassium:** A pinch of substance is treated with 2ml of sodium nitrite solution and then treated with 2ml of cobalt nitrate in 30% glacial acetic acid.	No Yellowish precipitate is obtained.	Absence of Potassium
10.	**Test For Sodium**: 2 pinches of the substance is made into paste by using HCl and introduced into the blue flame of Bunsen burner.	No Yellow colour flame appeared	Absence of Sodium
11.	**Test For Mercury**: 2ml of the extract is treated with 2ml of sodium hydroxide solution.	No yellow precipitate is obtained	Absence of Mercury
12.	**Test For Arsenic:** 2ml of the extract is treated with 2ml of sodium hydroxide solution.	No brownish red precipitate is obtained	absence of Arsenic

	III. Miscellaneous		
1.	**Test For Starch:** 2ml of extract is treated with weak iodine solution	Blue colour developed	Absence of Starch
2.	**Test For Reducing Sugar:** 5ml of Benedict's qualitative solution is taken in a test tube and allowed to boil for 2 minutes and added 8 to 10 drops of the extract and again boil it for 2 minutes. The colour changes are noted.	Brick red colour developed	Absence of Reducing sugar
3.	**Test For The Alkaloids:** a) 2ml of the extract is treated with 2ml of potassium lodide solution. b) 2ml of the extract is treated with 2ml of picric acid. c) 2ml of the extract is treated with 2ml of phosphotungstic acid.	Yellow colour developed	Presence of Alkaloid
4.	**Test For Tannic Acid:** 2ml of extract is treated with 2ml of ferric chloride solution	Block precipitate is obtained	Presence of Tannic acid
5.	**Test For Unsaturated Compound:** To the 2ml of extract 2ml of Potassium permanganate solution is added.	Potassium permanganate is not decolourised	Absence of unsaturated compound
6.	**Test For Amino Acid:** 2 drops of the extract is placed on a filter paper and dried well..	Violet colour developed	Presence of Amino acids
7.	**Test For Type Of Compound:** 2ml of the extract is treated with 2 ml of ferric chloride solution.	No Brown colour developed No red colour developed	Absence of Oay quinole, Pinephrine and Pyro catechol Anti pyrine,Alipathic amino acids and meconic

			acid are absent.
		No violet colour developed	Salicylate and resorcinol are absent.
		No Blue colour developed.	Morphine, Phenol cresol and hydroquinone are absent

RESULTS

- Calcium
- Tannic acid
- Alkaloids
- Amino acids are the chemical constituents present in **POORA PARPAM**.

Physicochemical Analysis

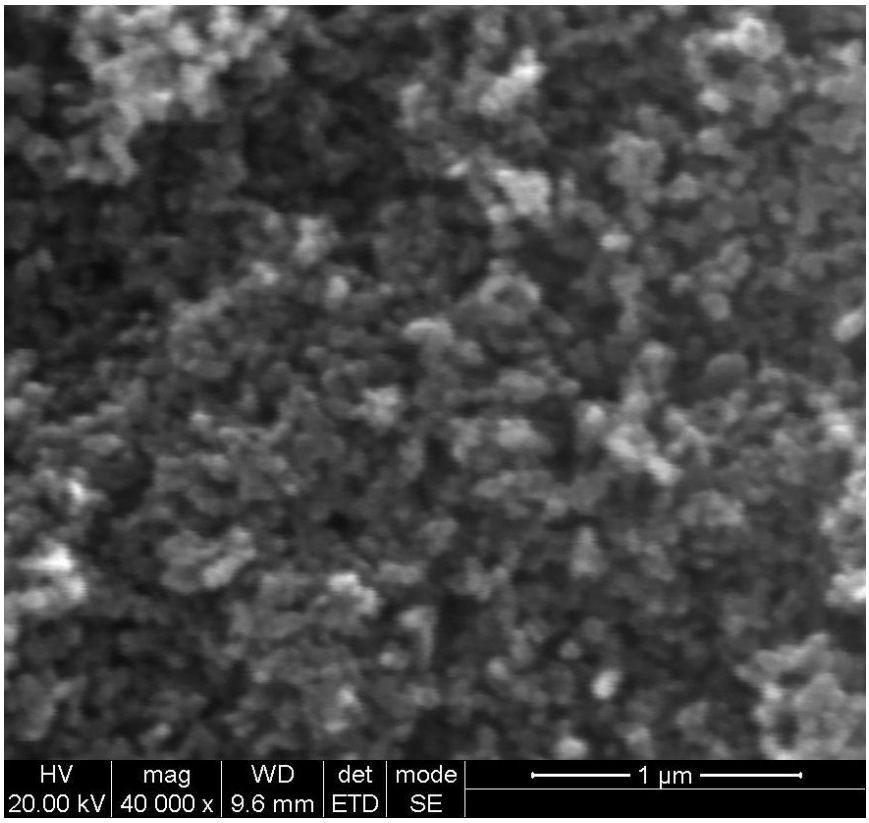
PHYSICO-CHEMICAL ANALYSIS OF POORA PARPAM (ICPOES METHOD)

S.No	Elements	Wavelength (nm)	Pooraparpam (mg/L)
1	Arsenic	As 188.979	BDL
2	Calcium	Ca 315.807	12.012 mg/L
3	Cadmium	Cd 228.802	BDL
4	Copper	Cu 327.393	BDL
5	Iron	Fe 238.204	01.854 mg/L
6	mercury	Hg 253.652	BDL
7	Potassium	K 766.491	53.421 mg/L
8	Magnesium	Mg 285.213	01.103 mg/ L
9	Sodium	Na 589.592	22.210 mg/L
10	Nickel	Ni 231.604	BDL
11	Lead	Pb 220.353	BDL
12	Phosphorus	P 213.617	26.741 mg/L
13	Zinc	Zn 206.200	01.421 mg/L

PHYSICO-CHEMICAL ANALYSIS OF POORA PARPAM

S.no	Parameter	Mean
1	Loss on drying at 105°C	5.12%
2	Total Ash	27.32%
3	Water soluble ash	6.55%
4	Acid insoluble ash	0.06%
5	PH	5.80%

HR-SEM ANALYSIS



Protocol

1. TITLE: CLINICAL EVALUATION OF SIDDHA DRUG, POORA PARPAM (Internal) NATHAICHOORI ENNAI (External) IN THE TREATMENT OF KEELVAYU (OSTEOARTHRITIS).

2. STUDY NO :

DATE OF SUBMISSION :

3. NAME OF THE INSTITUTION:

National Institute of Siddha
Tambaram Sanatorium,
Chennai-47
Telephone No : 044-22411611
Fax : 044-22381314
E.Mail : nischennaisiddha@yahoo.co.in
Website : www.nischennai.org

4. NAME OF THE RESEARCH SCHOLAR:

Dr.G.KARPAGAM,
P.G.Student, I YR[2013-2014] ,
Department of maruthuvam,
National Institute of Siddha,
Chennai -47.

5.NAME OF THE GUIDE:

Prof.Dr.S.MOHAN,.MD(S),
Director and head of the department,
Department of maruthuvam,
National Institute of siddha, Chennai-47.

6.BACKGROUND:

Siddha system is a most primitive system of medicine.Siddhars classified the diseases into 4448 and established a separate chapter.As per One such clinical entity is keel vayu mentioned in Siddha Maruthuvam(pothu) .

According to Siddha Maruthuvam(Pothu) the signs and symptoms of KEEL VAYU is, pain&sweliing in knee joints, morning stiffness, restricted movement, difficulty to walk, can be correlated with OSTEO ARTHRITIS(KNEE) in Modern Science

OSTEO ARTHRITIS is the most common form of arthritis. Approximately 80-90% of individuals older than 65 years have evidence of primary OA. In India knee osteoarthritis is more common in females than males and it the most frequent joint disease with prevalence of 22-39%.

Since large number of patients with OA(100 Patients/day) are reporting the OPD of Ayothidoss Pandithar Hospital, which made me to select this disease for my dissertation work.

The safety Studies of POORA PARPAM has been completed as a Dissertation work at NIS(Referrence:Dissertation -187(D), DR.MGR MEDICAL UNIVERSITY reg no:32093606,April-2012 , Department of nanju noolum maruthuva neethu noolum,National Institute of Siddha, chennai-47.and the trial drug not yet undergone for any clinical trial in osteo arthritis.

In the text veeramamunivar vagada thiratu **" POORA PARPAM "** a siddha formulation has been specifically indicated for KEELVAYU.The mode of preparation seems to be simple and cost effective. The main Ingredients of the above said formulation are Pooram(calomel), latex of *Calotropis gigantea* has anti vadha properties as per siddha literature.

7. OBJECTIVE

a.PRIMARY OBJECTIVE:

To study the siddha formulations "**POORA PARPAM"(Internal Medicine)& NATHAICHOORI ENNAI (External Medicine)** in the treatment of " KEEL VAYU"(osteo arthritis) for the management of pain.

b.SECONDARY OBJECTIVE:

To study keelvayu, on the basis of Envagai thervu, mukkutram, kalam,naadi, Neerkuri, Neikuri etc,,in order to evaluate the pathology.

To assess the predominance of the disease related to age,sex,socio-economic status,occupation and family history etc,.

8.STUDY DESIGN &CONDUCT OF STUDY:

- STUDY TYPE : An open clinical trial
- STUDY PLACE: OPD&IPD of Ayothidoss Pandithar Hospital,National Institute of Siddha,Tambaram Sanatorium,Chennai-47.
- STUDY PERIOD:12 Months
- SAMPLE SIZE :40 Patients

9.TREATMENT

a.POORA PARPAM(Internal Medicine)[Ref:Veerama munivar vagada thiratu,part-2,S.P.Ramachandran,Edition-sep 1994 :pg.no-69&70].

DOSAGE : 6 mgs twice a day

ADJUVANT : Ghee or Butter (after food)

COURSE : 12days

DURATION OF TREATMENT : 8 Days

DIETARY REGIMAN [8] : Avoid salt and Tamarind

Add - wheat rotti,ghee and butter.

Every first day of break (radiating)starts with head bath with the paste of Ajowan seeds and cow's milk,etc.Dietary advice is strictly followed during the period of drug administration as well as radiating period ,roasted salt intake is recommended.

METHOD OF DRUG ADMINIDTRATION:Given for 4 days by a break of 4 days. Again the medicine is given for 4days.

b.NATHAICHOORI ENNAI(External Medicine)[Ref: Sarabenthira vaithiya muraigal (Vatharoga sigichai)..sri.K.Vasudev sastri,B.A,Edition-4(nov-1998)] [9].

DOSAGE: Sufficient quantity (80ml)

Applied externally over the affected parts.

10. STANDARD OPERATING PROCEDURE FOR "POORA PARPAM":

Required raw drugs:

1. Purified pooram (calomal) -3 1/4 varagan(13.65gms)

2. Latex juice of *Calotropis gigentia, linn* -14 palam(490 grms)

3. Juice of *Allium cepa,linn* -14 palam(490 grms)

SOURCE OF RAW DRUGS

The above said raw drugs will be purchased from a well reputed country shop at Chennai .The raw drugs will be authenticated by Botanist NIS and Phormacogonist SCRI Arumbakkam, Chennai. The raw drugs will be purified and the medicine will be prepared as per SOP as in the Gunapadam Laboratory of NIS, Chennai.

PURIFICATION OF INGREDIENTS:

PURIFICATION OF POORAM:

Kammaru vetrilai-1/4 palam (8.75 Gms)

Milagu –1/4 palam (8.75 Gms)

Take the above mentioned 2 Ingredients, make a paste with water.Take 1.3lit water(1.padi) in mud pot, and the paste will be mixed to it.Take the pooram in dry clean cloth and tied together. pooram covered with the cloth will be immersed into the water and constantly heated until the water become ¾.then take the pooram out wash with pure water.

ALLIUM CEPA: Peal off the outer skin.

METHOD OF PREPARATION:

INGREDIENTS:

1. Purified pooram(calomal) -3 1/4 varagan(13.65gms)
2. Latex of *Calotropis gigentia,linn* -14 palam(490 grms)
3. Juice of *Allium cepa,linn* -14 palam(490 grms)

DRUG PREPARATION:

Purified Pooram will be placed in a clean dry cloth, fully covered and tied together.The above mentioned quantity of latex of *Calotropis gigentia* was taken in a mud pot and pooram covered with the cloth will be added into the erukan pal and

constantly heated until the latex remaining in the pot totally dried out.Then it will be ground into paste with small onion juice and will be made into small pills and dried in shade.pills were placed in a mud plate and covered with similar size of mud plate.The margines of the plates will be covered with clay pasted cloth.The plates will be placed inside the pit and pudam will be carried out with 40 palam cow dung cakes(1400 gms).Next morning the mud plates will removed and finished poora parpam will be collected.

DRUG STORAGE:

The prepared drug will be stored in a clean and dry wide mouthed glass container.

DISPENSING: The prepared drug will be dispensed in sachets (6 mg each) Patients will be advised to collect the medicines once in 4days for8days. At each visit the patients will be advised to return the unconsumed drug if any.

STANDARD OPERATING PROCEDURE FOR "NATHAICHOORI ENNAI":

Required raw drugs:

1. Mutrina nathaichoori *ver(Spermacoce hispida,linn*)-3 palam(105gms)

2. Vasambu (*Acorus calamus,linn)* -3/4 palam(26.25gms)

3. Poondu (*Allium sativum,linn*) -1/4 palam(8.75gms)

4. Amanaku ennai (*Ricinus communis*,linn) -1 padi(1.3 lit)

PURIFICATION OF TRIAL DRUGS:

ROOT OF NATHAI CHOORI: Wash with water

VASAMBU : Burnt the acorus calamus until it turned into charcoal.

POONDU : Peel off the outer skin

METHOD OF PREPARATION:

Take above mentioned 3 drugs and make it paste mixed with castor oil allowed to boil and finally the oil will be filtered..

DRUG STORAGE:

The prepared oil will be stored in a clean and dry wide mouthed glass bottle.

DISPENSING: The prepared oil will be dispensed in bottle (80 ml) once in 4days for 8 days.

11. SUBJECT SELECTION:

As and when patients reporting at OPD, Ayothidoss Pandithar Hospital, NIS with symptoms of inclusion criteria will be subjected to screening test and documentation will be done by using screening proforma .

12. SELECTION CRITERIA:

INCLUSION CRITERIA:

Patients who will be ful fill any of the following criteria will be included in the study:

- Age: 30- 60Yrs
- Sex – Both male and female
- Patients who will be having classical symptoms of pain &swelling of knee joints,stiffness&restricted movements .
- X-ray knee joint showing osteo arthritis
- Willing to give blood samples for before and after treatment.
- Patient willing to sign the informed consent stating that he/she will conscientiously stick to the treatment during 8 days but can opt out of the trial of his/her own conscious discretion.
- Patients who are willing to take radiological investigations.
- ***E*XCLUSION CRITERIA:**

A potential subject who will meet any of the following criteria will be excluded from participation in this study:

- Rheumatoid arthritis
- Gouty arthritis
- Tuberculosis
- Diabetus mellitus
- Hypertension
- Any other serious systemic illness
- Cardiac disease
- Chronic kidney disease.

WITHDRAWAL CRITERIA:

- Intolerance to the drug and development of any serious adverse reactions during the trial period.
- Patient turned unwilling to continue in the course of clinical trial.
- Increase in severity of symptoms.
- Patient will not take medication regularly.

13. ASSESSMENTS AND INVESTIGATIONS:

a) Clinical assessment

b) Siddha assessment

Routine investigations:

1. Modern parameters
2. Siddha parameters

b) Specific investigations

a)**CLINICAL ASSESSMENT:**

- Pain on knee joints
- Swelling
- Tenderness
- Joint stiffness
- Movement restrictions

SIDDHA ASSESSMENT:

Enn vagai thervu (Eight types of Examination):

- Naadi
- Sparisam
- Naa
- Niram
- Mozhi
- Vizhi
- Malam
- Moothiram

Siddha parameters:

- **Malam** - Niram:
  - Elakal / Erukal:
  - Muraigal (Times / day) :

- **Moothiram** (**urine**):
  - ✓ Neerkkuri (urine signs): Neikkuri:
    i. Niram:
    ii. Edai:
    iii. Manam:
    iv. Nurai:
    v. Enjal

b) ROUTINE INVESTIGATIONS:

a.Haematology

b.Blood sugar level - Fasting (mg/dl)
Post prandial (mg/dl)
Random (mg/dl)

c.Lipid profile

d.Renal function test: urea,
Creatinine,
uric acid.

e.Liver function test

f.Urine routine

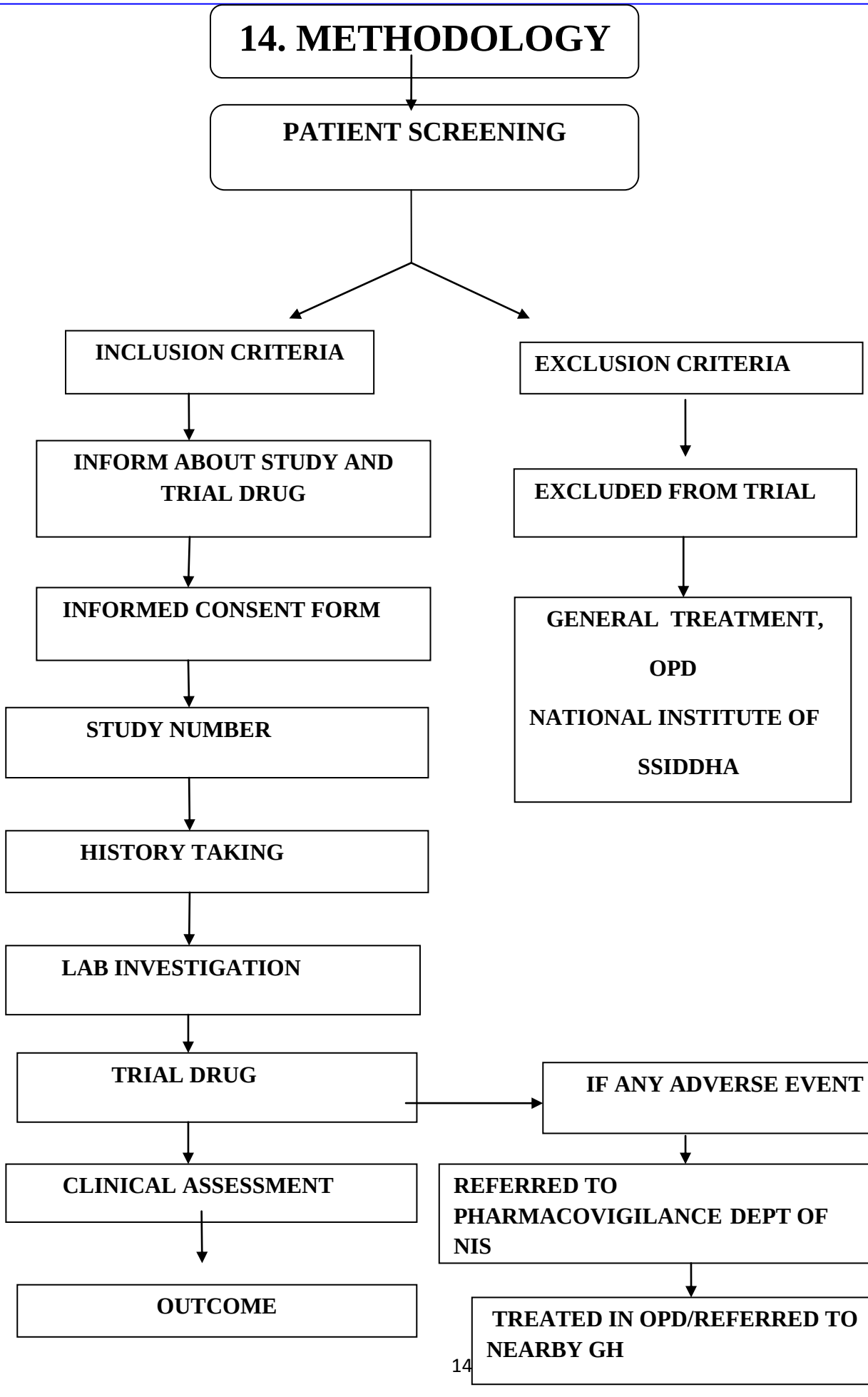
g.Motion test

.

c) SPECIFIC INVESTIGATION:

- **X RAY(KNEE JOINTS)**
- **ASO Titre**
- **CRP**
- **RA factor**

14. METHODOLOGY



15. STUDY ENROLLMENT:

- In this clinical trial, patients reporting at OPD 1 Department of Maruthuvam, Ayothidoss Pandithar Hospital,NIS with the clinical symptoms of pain on knee joints ,swelling ,stiffness&restricted movements,pain present in all limbs will be examined clinically for enrolling in the study based on the inclusion and exclusion criteria.
- The patients enrolled in this study will be informed about the objective of the study, trial drug, possible outcomes in their own language and terms understandable to them.
- After ascertaining the patient's willingness, informed consent will be obtained in the consent form.
- All these patients will be given unique registration card which will contain's information regarding patients' Registration number, Address, Phone number and Doctors phone number etc. so as to report easily if any adverse reaction arise.
- Complete clinical history, complaints and duration, examination findings-- all will be recorded in the prescribed Proforma in the case record form. Screening Form- I will be filled up; Form II will be used for recording the patients' history, clinical examination of signs and symptoms and laboratory investigations respectively.Patients will be advised to take the trial drug and appropriate dietary advice would be given according to the patients' perfect understanding.

16. CONDUCT OF THE STUDY:

Patients who have Satisified Incluction Criteria will be recruited for the Study Then as Per Random Number Envelope which was serially kept and opened one by one for Allowing to a Particular Treatment Group.

As per siddha literature, before starting the treatment for KEEL VAYU, purgation will be given with the OP medicine Agasthiar Kuzhambu 130 mg od with 15ml of notchi chaaru at early morning in empty stomach for one day.

Then the trial drug "**POORA PARPAM AND NATHAI CHOORI ENNAI**"

is given at a dose of 6 mg twice a day, 80 ml oil continuously for 4 days by a break of 4 days,patient should visit the hospital once in 4 days. At each clinical visit clinical assessment will be done and prognosis will be noted.

Laboratory investigations and x ray on knee joints will be done on 0th day and 12^{th} day of the trial. For OPD patients, for further continuation of the treatment.

During the course of the treatment, patient is advised not to take tamarind,non-vegetarian, and advised to take the diet as given in Form VIII. If any of the trial patient who fails to collect the trial drug on the prescribed day but wants to continue in the trial, from the next day or two, he/ she will be allowed, but defaulters of one week and more will not be allowed to continue and be withdrawn from the study with fresh case being inducted

Follow-up: After the end of the treatment ,the patient is advised to visit the OPD for another 2months for follow-up.In this follow up period ,the patients clinical improvement will be documented.

17. DATA MANAGEMENT:

- After enrolling the patient in the study, a separate file for each patient will be opened and all forms will be filed in the file. Study No. and Patient No. will be entered on the top of file for easy identification. Whenever the study patient visits OPD during the study period, the respective patient`s file will be taken and necessary recordings will be made at the assessment form or other suitable forms.
- The screening forms will be filed separately.
- The Data recordings will be monitored for completion by Guide (HOD, Dept. of Maruthuvam), SRO (Statistics) and the adverse event will be monitored by the members of the Pharmacovigilance department of NIS . All forms will be further scrutinized in presence of Investigator by Sr.Research Officer (Statistics) for logical errors and incompleteness of data to avoid any bias. No modification in the results is permitted for unbiased reports.

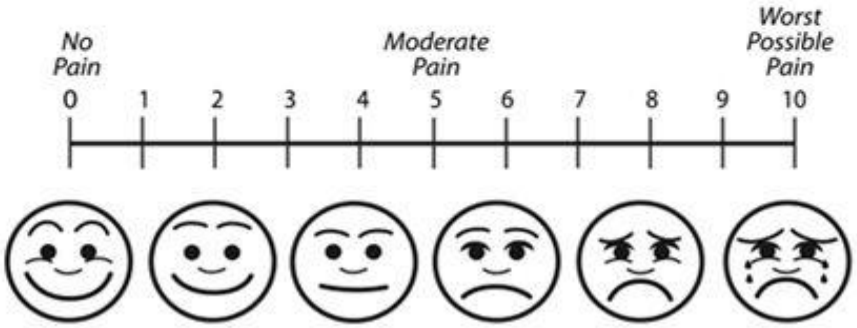
16. OUT COME OF TREATMENT:

PRIMARY OUT COME: [12]

UNIVERSAL PAIN ASSESSMENT SCALE:

Pain Intensity Scale: 0 to 10

(from Simkin, P. (2010), Pain Medications for Labor & Birth (PowerPoint). Waco, Childbirth Graphics



0	:	No Pain	
1 -3	:	Mild pain	
4-6	:	Moderate pain	
7-9	:	Severe pain	
10	:	worst possible pain	

SECONDARY OUT COME:

2. RESTRICTED MOVEMENT ASSESSMENT SCALE:

Gradation of movements:

- Grade 1 - Fit for all activities, do their work without support.
- Grade II - Mild pain present in knee joint, mild restricted movements.
- Grade III - Pain present in knee joint, moderate restriction of movements.
- Grade IV - Severe pain, bed ridden.

(Ref: Clinical manual for nursing practice (National Institute of Health Warren Grant Magnuson Clinical Centre)

17. ADVERSE EFFECT/SERIOUS EFFECT MANAGEMENT:

If the trial patient develops any adverse reaction, he/she will be referred to the pharmacovigilance department of NIS. The members of this department will assess the adverse event and recorded in the prescribed adverse reaction form. For any AE the investigator (PG Scholar) will be given the proper management at NIS OPD with free of cost.

18. STATISTICAL ANALYSIS:

All the datawill be entered into computer using MS Access software with macro for logical errors and manually cross checked for data entry error.Then the data will be exported to STATAL/SPSS Software for univariate/multivariate analysis.Student 't' test and Paired 't' test and Mantel-Haenszel chi-square test will be performed for determining the significance of a particular effect variable.

19.0 ETHICAL ISSUES:

1. To prevent any infection, while collecting blood sample from the patient, only disposable syringes, disposable gloves, with proper sterilization of lab equipments will be used.

2. No other external or internal medicines will be used. There will be no infringement on the rights of patient for this particular indication.

3. The data collected from the patient will be kept confidentially. The patient will be informed about the diagnosis, treatment and follow-up.

4. After the consent of the patient (through consent form) they will be enrolled in the study.

5. Informed consent will be obtained from the patient explaining in the understandable language to the patient.

6. Treatment would be provided free of cost.

7. In conditions of treatment failure, adverse reactions, patients will be given alternative treatment at the National Institute of Siddha with full care throughout the end.

8. The patients who are excluded [as per the exclusion criteria] will be given proper treatment, at NIS.

ASSESSMENT FORMS:

Form - I Screening and Selection Proforma

Form - II Case record form

Form - III Laboratory investigation form

Form – IV Treatment Compliance form

Form - V Information sheet

Form - VI Consent form

Form -VII Withdrawal form/ adverse drug reaction form/ Pharmacovigilance form

Form –VIII Dietary Advice form.

Certificates

NATIONAL INSTITUTE OF SIDDHA
राष्ट्रीय सिद्ध संस्थान

Department of AYUSH- MINISTRY OF HEALTH & FAMILY WELFARE
आयुष विभाग - स्वास्थ एवं परिवार कल्याण मंत्रालय
GOVERNMENT OF INDIA-भारत सरकार

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फ़ोन\Tele : 044-22411611 फैक्स\Fax : 22381314

ईमेल: nischennaisiddha@yahoo.co.in वेब :www.nischennai.org

F.No.NIS/6-20/IEC/14-15 Dt: 25.09.14

CERTIFICATE

Address of Ethics Committee: National Institute of Siddha, Tambaram Sanatorium, Chennai-600047, Tamil Nadu, India	
Principal Investigator: Dr.G.Karpagam, P.G. Student, Maruthuvam	
Protocol title: Clinical study on Siddha drug Poora parpam (Int) and Nathaichoori ennai(Ext) for the management of Keelvayu (Osteoarthritis)	
Documents filed	1) Protocol, 2) Data Collection forms 3) Patient Information Sheet 4) Consent form 5) SAE(Pharmacovigilance)
Clinical trial Protocol (others – Specify)	**Yes**
Informed consent documents	**Yes**
Any other documents	-
Date of IEC approval & its number	**NIS/IEC/8-14/5 - 26-08-2014**

We approve the trial to be conducted in its presented form.

The Institutional Ethics Committee expects to be informed about the progress of the study, any SAE occurring in the course of the study, any changes in the protocol and patient information / informed consent.

Chairman **Member Secretary**

NATIONAL INSTITUTE OF SIDDHA CHENNAI 600 047

The Tamil Nadu Dr.M.G.R. Medical University

#69, Anna salai, Guindy, Chennai-600 032.

This certificate is awarded to

Dr./~~Mr.~~/~~Ms.~~ G. KARPAGAM

for participating as ~~Resource Person~~ / Delegate in the Fifteenth Workshop on

"Research Methodology & Biostatistics"

for AYUSH Post Graduates & Researchers

Organised by the Department of Siddha

The Tamil Nadu Dr. M.G.R. Medical University from 23.06.2014 to 27.06.2014.

Dr. N. KABILAN M.D. (Siddha)
Reader, Dept. of Siddha

Dr. JHANSI CHARLES, M.D.
Registrar

Prof. Dr. D. SHANTHARAM, M.D., D.Diab.,
Vice-Chancellor

சித்த மருத்துவ மைய ஆராய்ச்சி நிலையம், அரும்பாக்கம், சென்னை - 600106
सिद्ध केन्द्रीय अनुसंधान संस्थान, अरुम्बाक्कम, चेन्नै - 600106
Siddha Central Research Institute
(Central Council for Research in Siddha, Ministry of AYUSH, Govt. of India)
Arumbakkam, Chennai – 600106
[Ph: 044-26214925, 26214809, Fax: 26214809, Email: crisiddha@gmail.com, Web: www.siddhacouncil.com]

29.12.2015

CERTIFICATE

Certified that the samples submitted for identification by Dr. G. Karpagam, II year MD Student, Department of Maruthuvam, National Institute of Siddha, Sanatorium, Chennai-600 047 is identified as Pooram – Mercurous chloride.

02/1/16
(R. Shakila)
Research Officer (Chemistry)

P. Elamkeeni
Cor. P. Elamkeeni R.O (S) Sci. -2)
for **(Dr. P.Sathiyarajeswaran)**
Assistant Director (Scientist 2)-I/c

NATIONAL INSTITUTE OF SIDDHA, CHENNAI – 600047

BOTANICAL CERTIFICATE

Certified that the following plant drugs used in the Siddha formulation **"Pooraparpam"** (Internal) and **Nathaichoori Ennai** (External) for the treatment of **Azhal keelvayu** (Osteoarthritis) taken up for Post Graduation Dissertation studies by **Dr.G.Karpagam**, M.D.(S), II year, Department of Maruthuvam, 2015, are identified through Visual inspection, Experience, Education & Training, Organoleptic characters, Morphology, Micromorphology and Taxonomical methods as

Calotropis gigantea (Linn.) R. Br. Ex Ait (Asclepiadaceae), Latex juice
Allium cepa Linn. (Liliaceae), Bulb
Allium sativum Linn. (Liliaceae), Bulb
Piper betle Linn. (Piperaceae), Leaf
Piper nigrum Linn. (Piperaceae), Fruit
Spermacose hispida Linn. (Rubiaceae), Root
Acorus calamus Linn. (Araceae), Rhizome
Ricinus communis Linn. (Euphorbiaceae), Seed oil

Certificate No: NISMB1972015

Date: 15-9-2015

Authorized Signatory
Dr. D. ARAVIND, M.D.(s),M.Sc.,
Assistant Professor
Department of Medicinal Botany
National Institute of Siddha
Chennai - 600 047. INDIA

SOPHISTICATED ANALYTICAL INSTRUMENT FACILITY

IITM, CHENNAI-36

PERKIN ELMER OPTIMA 5300 DV ICP-OES

Sample ID	**Elements Symbol Wavelength (nm)**	**Concentration**
POORA Parpam ----------(wt:0.32810g)		
	As 188.979	BDL
	Ca 315.807	12.012 mg/L
	Cd 228.802	BDL
	Cu 327.393	BDL
	Fe 238.204	01.854 mg/L
	Hg 253.652	03.215 mg /L
	K 766.491	53.421 mg/L
	Mg 285.213	BDL
	Na 589.592	22.210 mg/L
	Ni 231.604	BDL
	Pb 220.353	BDL
	P 213.617	26.741 mg/L
	Zn 206.200	01.421 mg/L

SOPHISTICATED ANALYTICAL INSTRUMENT FACILITY
INDIAN INSTITUTE OF TECHNOLOGY, MADRAS
Chennai - 600 036. INDIA

CERTIFICATE

Certified that drug **Poora parpam** formulated by Dr.G.Karpagam, III yr MD(S), Department of Maruthuvam, National Institute of Siddha, Tambaram Sanatorium, Chennai-47 was analysed by HR-SEM and ICP-OES at SAIF, IITM, Chennai-36 during April 2016.

Dr. R. Murugesan
Senior Scientific Officer
SAIF, IIT, Madras, Chennai-36.

Phone : 91-44-2257 4935 Fax : 91-44-2257 0545, 2257 0509
e-mail : saif@iitm.ac.in http://www.saif.iitm.ac.in

சித்த மருத்துவ மைய அராய்ச்சி நிலையம், சென்னை - 600106
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SIDDHA CENTRAL RESEACH INSTITUTE

(Central Council for Research in Siddha, Ministry of AYUSH, Govt. of India)
Anna Govt. Hospital Campus, Arumbakkam, Chennai – 600106
Phone: 044-2621 4925, Fax: 044-2621 4809
www.crisiddha.tn.nic.in, Email: crisiddha@gmail.com

19.04.2016

Name of the student: Dr. G. Karpagam, III Year MD Student,
Department of Maruthuvam, National Institute of Siddha, Chennai-600 047.

PHYSICO-CHEMICAL ANALYSIS OF POORA PARPAM

S.No	Parameter		Mean
1.	Loss on Drying at 105°C	:	5.12 %
2.	Total Ash	:	27.32 %
3.	Water soluble Ash	:	6.55 %
4.	Acid insoluble Ash	:	0.06 %
5.	pH	:	5.80

(R. Shakila)
Research Officer (Chemistry)

19/4/16

(Dr. P. Sathiyarajeswaran)
Assistant Director (Scientist 2) I/c

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